

D2N2 Economic and Policy Review

Supporting the development of the D2N2
Strategic Economic Plan

February 2018



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Executive Summary

Introduction

1. The Strategic Economic Plan (SEP) prepared by the D2N2 Local Enterprise Partnership (LEP) in 2014 has demonstrated considerable success. By 2016, its target of achieving 55,000 additional private sector jobs had been reached, and some £257 million had been secured to deliver the SEP's infrastructure priorities.
2. Four years on from the launch of the original SEP, the time is right to review the strategy, particularly in the light of the changed national policy context and exciting new growth opportunities around converging technologies. In that context, SQW was commissioned to support D2N2 in preparing "*a focused and strategic document that will set out policies and priorities that will drive future investment decisions*", taking a long-term view to 2030.
3. To support the development of the new SEP, this report provides a synthesis of the policy context and evidence base, much of which has been developed and commissioned by D2N2 over the past year. It then presents a summary of the key strengths, weaknesses, opportunities and threats facing the D2N2 economy. It is intended to inform the themes, priorities and key emphases that the SEP should contain, and to spark debate.

Global trends and national strategy: The context for growth

4. The new SEP is being developed in conditions of considerable economic and policy uncertainty. However, looking ahead to the next 10-15 years, three major trends will be important in driving future growth:
 - first, the impact of digital enabling technologies and the so-called 'data revolution', not just on specific products and processes, but on whole business models
 - second, the impact of decarbonisation and the need for greater resource efficiency
 - third, the impact of an ageing population and the implications that this will have for the future workforce.
5. The Government's new Industrial Strategy reflects these drivers, with its focus on the need to address four technology 'grand challenges' over the coming years. The Strategy also places an emphasis on growth at local level, and provides a very important backdrop for the development of the SEP.

Economic scale and productivity

6. D2N2's total GVA is around £46 billion. This is equivalent to around £21,250 per capita – roughly 80% of the UK's per capita GVA figure. Across D2N2, GVA per head of population is strongest in Derby and Nottingham, where it is (in both cases) above the national average, reflecting both cities' functions as major centres of economic activity.

7. Productivity in D2N2 is about 12% below that of the UK overall, at around £28.60 per hour worked. This is broadly comparable with neighbouring LEP areas: the productivity deficit is a regional challenge, not just one for D2N2.
8. Analysis of the productivity gap suggests that D2N2 has a large stock of firms that are ‘just below average’. Efforts to drive up productivity in the core of mid-tech ‘follower’ firms, for example through adoption of new technologies, processes or improved leadership and management, could be an appropriate policy response.

Industry: Sectors, enterprise and innovation

9. There are around 76,000 active enterprises in D2N2, and the business stock has grown in recent years. However, the area’s business density is lower than the UK and East Midlands averages.
10. Reflecting the national picture, the largest sectors are in retail and wholesale and health and social work. However, manufacturing stands out as being particularly concentrated in the D2N2 area: this is reflected in strong science and innovation capabilities linked with the manufacturing base, much of which is world-class. Nevertheless, while the manufacturing sector is a regional asset, high levels of manufacturing employment do not, in all parts of D2N2, translate into higher productivity. Improving productivity and resilience beyond the core of international standard manufacturers is likely to be important.
11. D2N2’s ‘consumption-driven’ sectors are less productive. But they are important in employment terms and are likely to remain so. Raising productivity in these sectors will have social as well as economic benefits.

Places: Infrastructure and spatial economy

12. Over the next 20 years, population growth will be especially focused on the south of D2N2. This is likely to reinforce the roles of the main cities as drivers of the economy. However, despite the growth of the cities and their hinterlands, functional links between Derby and Nottingham are relatively weak – despite the complementarity of their assets and capabilities. The case for strategy focused on enabling both to be ‘more than the sum of their parts’ would appear to be strong.
13. The wider East Midlands context is important. Some of D2N2’s critical infrastructure is beyond its boundaries (such as East Midlands airport); looking to the future, High Speed 2 and the wider measures within the Midlands Connect strategy will be vital in developing better connections to Birmingham and across the Midlands. In the north of D2N2, links to Sheffield City Region are strong, and will continue to be so.
14. In the light of these strong regional links and indeed the international reach of our universities and industrial base, the new SEP is likely to be ‘outward facing’, focused on shared assets and unlocking the growth potential with neighbouring LEP areas and beyond.

People: Skills and the labour market

15. Economic activity and employment rates in D2N2 are high. Unemployment has fallen for several years and is currently at historically low levels – although this should not be taken for granted, given the current weak growth outlook for the UK economy.
16. Despite high employment rates, growth in earnings has been low. Earnings in D2N2 are lower than in Britain as a whole. This is reflected in D2N2’s occupational profile: there are fewer jobs in high paying occupational groups. However, demand is rising for people in skilled technical occupations, and skill shortages particularly relate to technical roles.
17. Qualifications lag behind Great Britain overall, especially at higher levels. There are also challenges associated with educational attainment and the performance of the education system.
18. Looking to the future, the Government’s reforms to technical skills provision are substantial and long term, and the prospect of greater leverage for LEPs within the skills system is welcome.

Strengths, weaknesses, opportunities and threats

19. Based on the analysis presented within this report, Chapter 7 sets out a summary of the strengths, weaknesses, opportunities and threats facing the D2N2 economy. Overall, it finds that there are substantial opportunities for D2N2. These are particularly associated with its world-class manufacturing base, wider sector strengths in areas such as life sciences and its universities.
20. Future infrastructure investment associated with High Speed 2 is also important, both for the improved connectivity that it will bring and the opportunity it will provide for Derby and Nottingham to make the most of their complementary assets.
21. However, the area has significant challenges to overcome, particularly associated with low productivity and a relatively weak skills profile.

1. Introduction

Background: The case for a new Strategic Economic Plan

- 1.1 The Strategic Economic Plan (SEP) prepared by D2N2 in 2014 has demonstrated considerable success. The Plan set out an overall vision of “*a more prosperous, better connected and increasingly competitive and resilient economy*”, with the aim of securing 55,000 additional private sector jobs between 2013 and 2023. By 2016, this target was reached, reflecting a sustained recovery from the earlier global economic downturn, while D2N2’s most recent *State of the Economy* report highlights continued employment and business expansion¹.
- 1.2 The Plan has also been successful in securing Government investment (matched with funding from the private sector) to support economic growth. Through three Local Growth Deal rounds, some £257 million has been allocated to the D2N2 area to support transport infrastructure and other capital schemes, while D2N2 has also successfully launched and delivered the Growth Hub business support service and has demonstrated strong progress in investing resources allocated via the European Structural and Investment Funds.
- 1.3 However, nearly four years on from the preparation of the previous SEP, there are three reasons why the time is right to review the strategy:
 - First, despite strong employment growth, **D2N2’s productivity deficit is persistent** (in the context of generally weak productivity growth in the UK overall): in the long run, growth means raising the quality and value of employment, which in turn will require action on several fronts
 - Second, **the wider economic policy context has changed substantially**. Within the overarching context of the challenges (and opportunities) associated with Brexit, the Government’s new *Industrial Strategy* sets out an approach to growth focused on maximising the potential of technological change in industry, linked with the development of ‘local industrial strategies’ to build on regional strengths
 - Third, **D2N2 has grown and matured as a partnership**. The 2014 SEP responded to clear Government guidance at the time, setting out specific investment requirements – but delivering long term growth across a large and complex area will mean galvanising the wider business, political and educational community in support of shared objectives.
- 1.4 In this context, D2N2 commissioned SQW to support the preparation of “*a focused and strategic document that will set out policies and priorities that will drive future investment decisions*”, taking a long-term view to 2030. The new SEP is intended to be a concise and accessible document: in support of its development, D2N2 has developed an extensive evidence base, considering (*inter alia*) the drivers of local productivity, skills mismatches, the concept of ‘inclusive growth’ and D2N2’s sectoral assets and science and innovation strengths.
- 1.5 This report provides a synthesis of the policy context and the evidence base to inform the development of the SEP and to spark debate on its content and direction. It draws on analysis

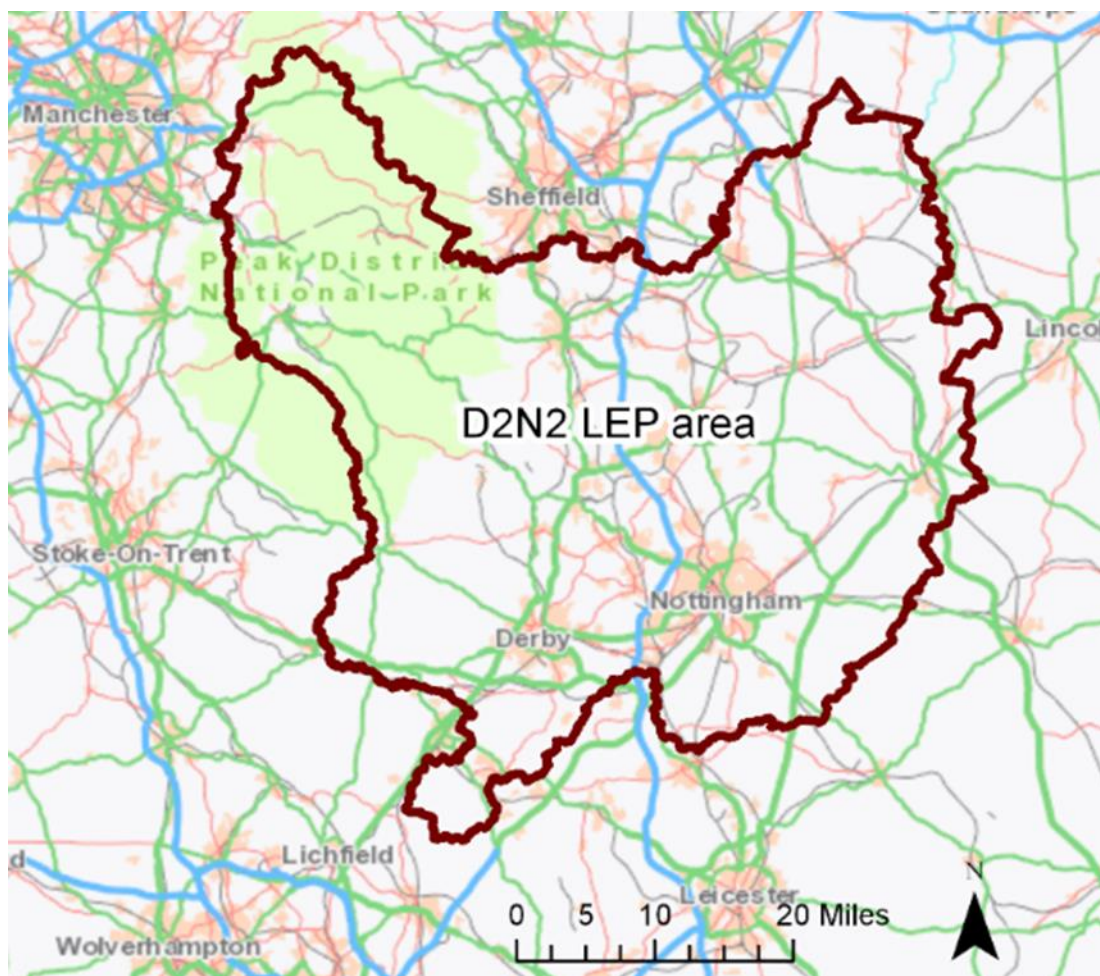
¹ D2N2, 2016/17 *State of the D2N2 Economy*. p.2

prepared by D2N2 and its partners, as well as wider evidence on key economic trends and drivers, and concludes with a summary assessment of D2N2's economic strengths, weaknesses, opportunities and threats.

Introducing D2N2

- 1.6 D2N2 is a substantial part of the Midlands economy, and that of the UK as a whole. Encompassing Derby, Derbyshire, Nottingham and Nottinghamshire, it is the largest local enterprise partnership area in the Midlands (and the fourth largest in England outside London), with a population of around 2.2 million. In 2015, it generated GVA of around £44 billion.
- 1.7 Reflecting its scale, the area is diverse, including the major urban centres of Nottingham and Derby (and their associated stock of commercial, educational and public sector assets), a number of significant sub-regional centres and areas of deep rurality and high environmental quality, including the Peak District National Park. Reflecting its location at the heart of England, it enjoys generally good strategic connectivity via the Midland Mainline and the M1, A1 and A50, as well as via East Midlands and Doncaster Sheffield airports located just beyond its boundaries. Connectivity will be further improved following the completion of High Speed 2 after 2030.

Figure 1-1: D2N2: Location and geography

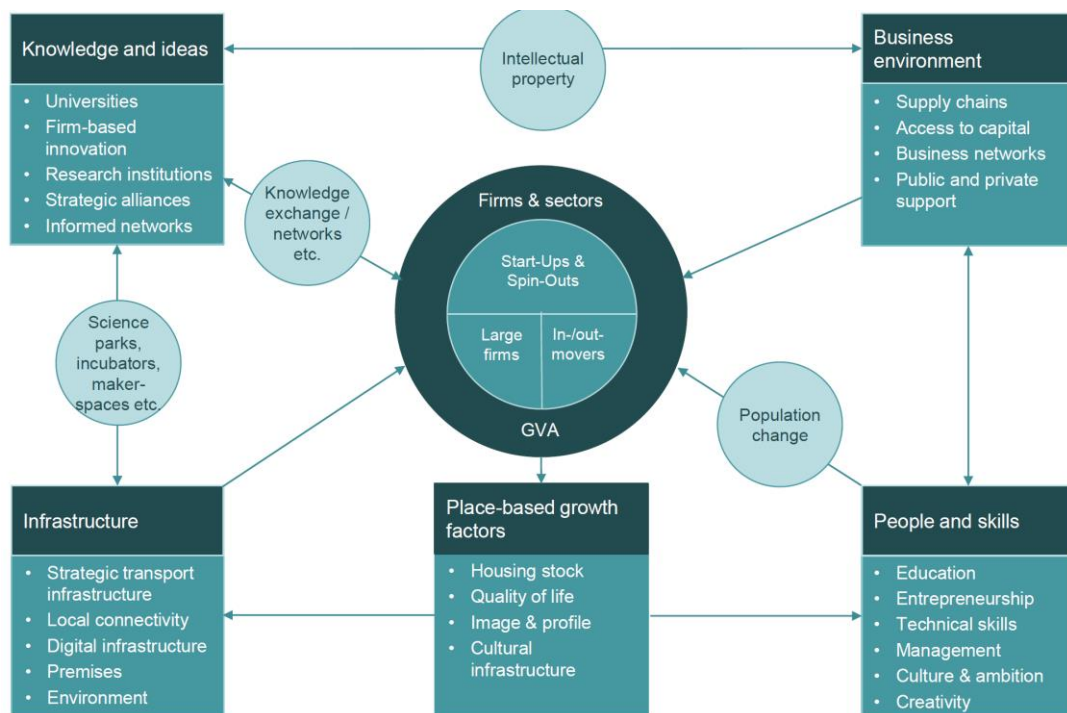


Source: SQW 2017. Licence 100030994. Contains OS data © Crown copyright (and database right) 2017

Framework for analysis

- 1.8 D2N2’s local economic evidence base is potentially very extensive: the challenge is ‘seeing the wood for the trees’ and identifying the key trends and drivers and their implications for future strategy. To assist in this, we have drawn on a framework for analysis which takes into account the key factors within an economy that (ideally) work together to promote innovation-led productivity growth, illustrated in Figure 1-2 below.

Figure 1-2: Developing the Strategic Economic Plan: A framework for analysis



Source: SQW 2017

- 1.9 Taking into account the ‘foundations of productivity’ set out in the Government’s *Industrial Strategy*, our analytical framework considers:

- at the centre, the composition of the **business base**: the sectoral distribution and the combination of large and small firms, inward investors and indigenous businesses that generate added value and employment
- local capacity to generate **‘knowledge and ideas’**, including the stock of academic (and indeed industry or NHS-led etc.) research relevant to economic growth and the mechanisms through which it is exchanged and commercialised
- the ‘hard’ **infrastructure** that contributes to growth, including transport and digital connectivity, as well as the supply of suitable employment land and business premises
- the supply of **people** with the technical, management and entrepreneurial skills and behaviours needed to support current and anticipated economic demand – and the capacity to develop and adapt to change
- the nature of the broader **business environment**, including business-to-business links through supply chains, associations and informal networks, access to investment and growth finance and publicly and privately backed business support provision

- wider '**place-based**' **growth factors**, including the availability and affordability of the housing stock, actual and perceived quality of life of the area and its image and profile as a place to live, work and play.
- 1.10 All of these factors are interlinked – so if the SEP is to be successful, it will need to look at the 'whole D2N2 system'. However, any long-term plan needs to prioritise, based on the evidence of the current (and potential) strengths of its business environment and the factors that will require investment to support productivity growth within the business base.

Report structure

- 1.11 Building on this framework for analysis, the remainder of this report is structured as follows:
- **Chapter 2** sets the context for economic growth. It outlines the major technological trends and drivers that will impact on the D2N2 economy over the next 10-15 years and explains how these are translating into Government policy.
 - **Chapter 3** then provides a high level overview of the 'scale and strength' of the D2N2 economy, looking at recent and anticipated output and productivity growth
 - **Chapter 4** considers D2N2's industrial stock – the business base at the centre of our framework and its sectoral composition – and looks at its relative strengths and innovative capacity
 - **Chapter 5** places this in the context of D2N2's 'spatial economy', considering the distribution of assets and growth opportunities within the area, links to the wider Midlands Engine and neighbouring city regions and the stock of critical infrastructure (including the potential impact of High Speed 2)
 - **Chapter 6** then analyses current and future workforce capacity in the context of the skills and capabilities that may be required in the future, given long-term trends and D2N2's industrial and innovation assets
 - Finally, **Chapter 7** presents a medium-to-long term assessment of the strengths, weaknesses, opportunities and threats facing D2N2's economy, and the implications of these for the design of the SEP.

Throughout the report, we have sought to draw out key themes and issues from the existing evidence base. There is substantial further data contained within D2N2's suite of evidence reports, available via the D2N2 website. In particular, an extensive summary of current relevant economic data is set out in the 2016/17 *State of the D2N2 Economy* report.

Within a relatively short report, we have generally focused our analysis on D2N2 as a whole, recognising that the final SEP will be a strategy for the whole area. However, D2N2 is large, diverse and complex – and given its geographical location at the heart of England, economic opportunities just outside its boundaries are highly relevant to many of its communities. We have therefore included more local analysis where appropriate.

2. Global trends and national strategy: the context for growth

Summary

- In the short term, there is considerable economic and policy uncertainty.
- However, looking ahead to the next 10-15 years, the digitalisation and decarbonisation of the economy and the steady ageing of the population will have important implications for D2N2's future growth. In particular they are likely to lead to opportunities for, and pressures to drive up, productivity
- The Government's approach to Industrial Strategy broadly reflects these trends, and – with the regional approach to the Midlands Engine – provides a context for the development of the SEP.

Introduction

- 2.1 Future growth in D2N2 will take place in the context of global drivers of change, to which the local economy will need to both contribute and respond. This chapter sets out some of the key medium-to-long term 'megatrends' that will impact on the economy over the next 10-15 years. It then explains the emerging national and regional policy context for the SEP and the shorter-term economic outlook over the next few years.

Transformation, convergence and disruption: Long term drivers of change

- 2.2 Looking to the long term, a series of reports have analysed the major technological and social trends that are likely to drive future growth. Within these, three key drivers of change stand out:
- the **impact of digital enabling technologies and the so-called 'data revolution'**, not just on specific products, production processes and skills requirements, but on whole business models. In the long run, most businesses will be 'digital' businesses
 - the **impact of decarbonisation** and the need for greater resource efficiency. Over time, most businesses will need to become 'low carbon'
 - the **impact of an ageing population**, and the implications that this has for healthcare demand and for the workforce. Over time, businesses will increasingly work with an older workforce for an older customer base.
- 2.3 These trends are interlinked and overlap with each other: for example, pressure on finite resources drives demand for more resource-efficient technologies; more resource-efficient technologies drive out less efficient products and services. All are also incorporated within the Industrial Strategy as 'grand challenges' that the UK will need to address if it is to be at the forefront of the industries of the future. The following paragraphs explain each 'driver of change' in more detail.

Digitalisation, digital technologies and Industry 4.0

2.4 Digitalisation is “the process of collecting and converting information into a digital format”². Digitalisation is impacting across the economy as the volume of data and the development of technologies to store and analyse it grows. This has had a transformational impact on some sectors already (for example media and entertainment; or retail). So over time, more businesses will become ‘digital’ businesses (even if their origins or core products long pre-date digital technology). Looking to the future, trends that will be important over the next few years include the growth of:³

- **Artificial intelligence (AI)**, its impact on a much wider and more sophisticated range of customer interactions and the ability of machine learning to replace a wide range of tasks and decisions that are currently carried out manually
- **‘Rapid changeability’** to meet customer needs. For example, ‘additive manufacturing’ (also referred to as 3D printing) enables the production of solid objects from a single data source, simplifying manufacturers’ ability to create prototypes or small batches of final goods from limited resources. This also has implications for the *distribution* of production, as goods can be produced in decentralised, smaller facilities
- **New digital platforms** and the relationship between providers of goods and services and the providers of their routes to customers. This could mean, for example, a changed relationship between producers of physical goods and suppliers of services as – for instance – rental models and ‘servitisation’ are made more viable by new technology
- **Use of data to affect behaviour change**, for example in monitoring customer feedback and gaining a better understanding of how people use or respond to particular products. This will be as significant in public services (for example in understanding how patients respond to certain treatments) as in the commercial sector.

Opportunities at the ‘leading edge’...

2.5 The UK has a leading role at the ‘cutting edge’ of the digitalisation agenda: of particular relevance to D2N2, given its strong automotive sector, the Industrial Strategy specifically highlights the potential of data-enabled autonomous vehicles as a key national opportunity⁴. The recent Midlands Engine Science and Innovation Audit also highlighted the leading role played by businesses in a number of key sectors in using advanced digital capabilities to accelerate their R&D activities⁵:

Technology trends applied to key growth sectors

² Tech North/ RSA/ Impact Hub (2016), *The Digital Powerhouse: The innovation potential of tech clusters in the North*, p.10

³ Accenture (2017), *Technology Vision 2017: Technology for People – The era of the intelligent enterprise*; Stephanie Shipp et al (2012), *Emerging global trends in advanced manufacturing*, Alexandria, Virginia: Institute for Defense Analyses

⁴ HM Government (2017), *Industrial Strategy*, p.48

⁵ Midlands Engine (2016), *Science and Innovation Audit Report*, Vol. 1, p.16

Recent Science and Innovation Audits identified a number of specific trends within key opportunity sectors. A couple of examples are highlighted below:

Next generation transport

- Whilst fully **autonomous cars** are still some way-off market readiness, the rise of their pre-cursors will continue. This includes **connected cars** (fully digitised vehicles with Wi-Fi; advanced infotainment apps; vehicle-to-vehicle communications that let cars “talk” to each other; real-time location services; etc.) and **intelligent cars** (incorporating self-braking, self-parking, automatic cruise control, automatic accident-avoidance features, computer-operated power steering, etc.)
- Use of **lightweight materials** is forecast to grow across all industries, particularly the automotive sector, due to stricter CO₂ emissions regulations, creating a €300bn market for high-strength steel, aluminium, and carbon fibre by 2030.
- **Increasing adoption of high speed rail** across developed and developing markets is predicted; worldwide high speed track length is forecast to have a compound annual growth rate of 4.5% to 2020.

Medical technologies and life sciences

- A new market is developing in **connected medical devices**. This includes ‘smart assistive technology’, devices helping people perform tasks made harder by their condition. Sensor technology in the form of ‘smart pills’ can transmit data on the patient’s response to medication, and the development of relatively cheap, accurate and connected diagnostic equipment is leading to hospital-standard diagnosis at home. Linked with this, production costs for personalised devices are likely to fall through the development of 3D printing techniques
- Much of the scope for **digitalisation in the health sector** has yet to be realised. At a basic level, health service digitisation is often seen as improving transactional processes. But the mainstream use of ‘machine learning’ to support clinical decisions will lead to greater advances in care, and the potential to analyse and visualise multiple patient records. The UK has an opportunity to gain economically from health service digitisation through the integrated NHS and its potential for robust data collection.
- **Computing ability is driving down the cost, and increasing the effectiveness, of drug discovery**, as the potential to screen multiple samples and analyse complex data increases. The cost of sequencing a single person’s genome has fallen to around \$1,000, increasing the potential to gather and analyse population-level medical databases will increase substantially. This impacts on the *nature* of medical research (broadly speaking, increased data analysis and less biological or chemical experimentation) and opens up commercial opportunities for smaller research-driven businesses, freed from the high capital costs once borne by the big pharmaceutical firms.

Source: Midlands Engine Science and Innovation Audit (2017); Innovation South Science and Innovation Audit (2017)

... risks to slow adopters...

- 2.6 However, despite Britain’s *potential* to become a world leader in the ‘fourth industrial revolution’ and the existence of world-class companies and research, there is a widespread view that this is not being realised. Alongside the development of the Industrial Strategy, the Government commissioned Jürgen Maier, the chief executive of Siemens UK, to lead the **Made Smarter review** of industrial digitalisation. The review highlights three constraints that hold UK manufacturing (particularly ‘mid-tech’ manufacturing) back⁶:

⁶ Making Smarter Review (2017), <http://industrialdigitalisation.org.uk/wp-content/uploads/2017/10/Made-Smarter-Review-Final-Report-2017.pdf>

- **Lack of effective leadership**, including fragmented capacity for diffusion of technology and a limited understanding of the potential for industrial digital technologies
- **Poor levels of adoption**, particularly among SMEs, and partly linked with skills shortages and the national business support offer
- **Under-leveraged innovation assets**: despite world-class research strengths, these are insufficiently focused on commercialisation.

2.7 The review points to some clear industrial policy implications, in particular the need to raise skills levels and management awareness and capacity in SMEs to drive adoption, and to strengthen links between the research base and commercialisation. These will be familiar themes to those who have followed the debate about the UK's productivity deficit over many years – but they highlight the fact that businesses need either to adopt and adapt to digitalisation, or be overwhelmed by it.

... and significant labour market (and social) implications

2.8 Digitalisation also has significant employment implications, some of which are already visible. The impacts of AI on employment are debated, although most recent examples of automation suggest that *aggregate* employment rises as a result of the introduction of new technology-driven products (and the productivity gains associated with them), even if some existing jobs are lost⁷. However, the speed and scale of employment change driven by automation could mean significant labour market dislocation in the medium term⁸.

2.9 Alongside quantitative changes in overall employment numbers, **digital technology is also driving changes in the way in which people are able to access employment** and the way in which the labour market works. Accelerating the trend towards increasing 'flexible' and freelance employment, the development of 'on demand' labour platforms (such as LinkedIn's pilot freelance matchmaking service, currently being trialled in the United States) could disrupt conventional employment structures. Meanwhile, the effect of digital communications on working practices (the ability in many occupations to work anywhere) and the consequent effects on land use (lower demand for large-scale conventional office space; rising demand for flexible co-working space in proximity to cultural and leisure amenities) are already present.

Decarbonisation

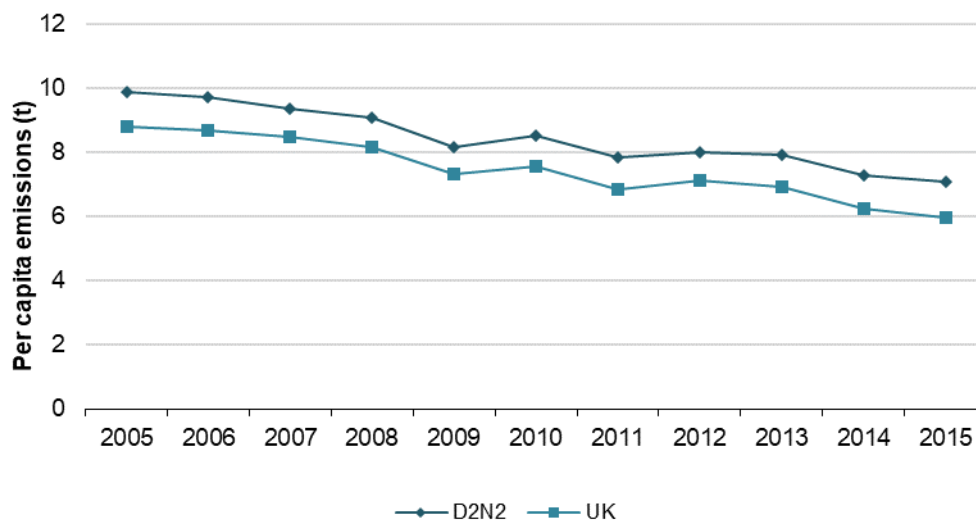
2.10 Like the growth of digital technology, the need to become more efficient and sustainable in our use of scarce resources is at the heart of all economic growth. The growth of 'low carbon' solutions is essentially an interaction between regulatory pressures (including the commitments made by the UK and other countries to reduce carbon emissions), cost pressures (linked with regulation) and technology (incentivised by regulation and pricing).

⁷ Georgios Petropoulos (2017), *Do we understand the impact of artificial intelligence on employment?*, Bruegel Institute

⁸ Economists' assessments of jobs potentially vulnerable to automation vary substantially (between 9% and 54% according to various studies), and there is also uncertainty regarding the scale of the productivity gain. See Michael Chui, James Manyika and Mehdi Miremadi (2015), *Four fundamentals of workplace automation*, McKinsey; Melanie Arntz, Terry Gregory and Ulrich Zierahn (2016), *The risk of automation for jobs in OECD countries: A comparative analysis*, OECD

- 2.11 Over the past decade, the UK has been successful in reducing its carbon footprint and D2N2 has followed the national trend (see Figure 2-1)⁹. Part of the UK's (and Europe's) strategy is to drive competitive advantage in low carbon solutions through the effective use of regulation: ultimately, all industry will need to reduce carbon consumption; those able to do so first will gain a competitive edge.
- 2.12 Looking to the future, within the Industrial Strategy, the Government sets out a commitment to 'clean growth', "leading the world in the development, manufacture and use of low carbon technologies, systems and services that cost less than high carbon alternatives"¹⁰. The **Clean Growth Strategy** published by the Government in October 2017 takes a cross-sectoral approach, highlighting the opportunities in renewable energy generation, construction and manufacturing¹¹.

Figure 2-1: Carbon emissions per capita, 2005-15



Source: ONS, UK local authority and regional carbon dioxide emissions national statistics

- 2.13 Decarbonisation has 'downside' implications for specific sectors, most obviously, those that are energy-intensive (including, in D2N2, the area's existing non-renewable power generation industry). But it also presents incentives to use technology to reduce input costs (for example, in low carbon methods of construction) and to develop alternative products (for example, electric vehicles) and, in the long run, to sustain economic growth within the existing resource base. However, while the long term direction is clear, in the short term, the global economy remains heavily dependent on oil and gas, and price incentives to exploit alternatives are cyclical.

⁹ Carbon emissions per capita partly reflect the energy intensity of the industrial base, and partly the spatial distribution of the population, with urban areas generally producing lower emissions than rural areas, due to the greater density of urban housing stock and efficiency of transport systems, etc.

¹⁰ HM Government, *Industrial Strategy*, p.43

¹¹ HM Government (October 2017), *The Clean Growth Strategy: Leading the way to a low carbon future*

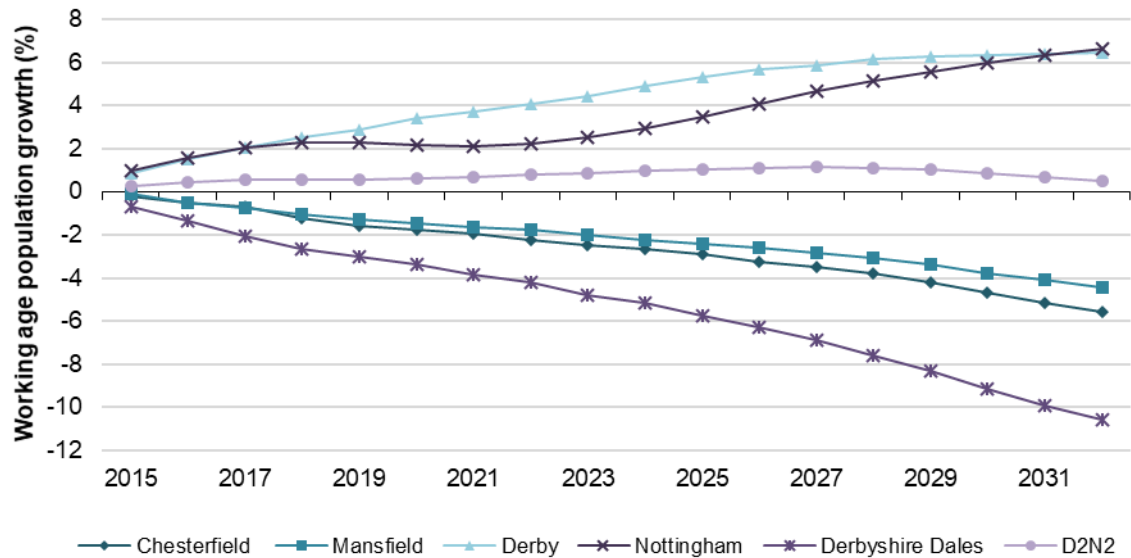
Demographic change

2.14 Aside from these technological changes, changing demography will also have significant implications for the future of the economy:

- First, the ageing population is likely to drive demand for different goods and services and a changing balance of public expenditure (associated with, for example, the current rising costs of health and social care and the growing market for medical devices and pharmaceuticals to treat age-related conditions).
- Second, there are **potentially significant labour market implications**. In D2N2, the overall population is forecast to grow by 197,000 between 2014 and 2039: an increase of 9%, somewhat below the national rate of growth, but still a significant rate of increase. However, the *working age* population is expected to rise by just 9,000 over the same period – an increase of about 1%¹². While people increasingly work past the traditional retirement age, and the state pension entitlement age is steadily increasing, over time, there will be fewer workers supporting higher numbers of retired people. The challenges associated with this may become increasingly visible over time should working-age immigration fall, either because of Brexit, or the gradual narrowing of wage differentials within Europe.
- Third, within D2N2, **working age population growth is forecast to concentrate within the cities**. In the period to 2031, only in Derby and Nottingham is working age population growth forecast to exceed the England average. This reflects a general (national) trend towards younger population growth in major cities and university towns, partly linked with some of the technology-driven location considerations described above. It also reflects the significant environmental constraints on new growth in parts of the area, such as the Peak District.

¹² ONS, Sub-national Population Projections, 2014

Figure 2-2: Working age population growth, 2014-31 (% change): D2N2 and selected districts



Source: ONS, Sub-National Population Projections, 2014

Considering the long-term trends

2.15 Two features of the three major long-term trends described above are worth noting. First, they are global and (mostly) inevitable – so for D2N2, the focus of policy is in how we respond to and make the most of them. Second, they all have implications for productivity growth. On the one hand, the pace of new technology driving automation and the development of new products and markets hold out the potential for significant productivity gain. On the other, a slow rise in people of working age relative to population growth overall points to a long-term need to raise output per worker if living standards are to improve over time. This is a central national challenge, and the implications of this for D2N2 are explored in the chapters that follow.

In the short run: The current economic outlook

2.16 In the shorter term, D2N2’s new SEP will be prepared at a time of considerable short-term economic uncertainty. Modest GDP growth of 1.5% is forecast for the UK in 2017, somewhat lower than in the United States and the Eurozone; in 2018 and 2019, the Office for Budget Responsibility expects growth to fall to 1.4% and 1.3% respectively¹³. This reflects wider uncertainties associated with Brexit and weak gains in productivity. Nevertheless, at local level, East Midlands Chamber’s most recent Quarterly Economic Survey reports some resilience in business sentiment, with an increase in businesses anticipating turnover and profitability to rise¹⁴.

¹³ Office for Budget Responsibility (November 2017), *Economic and Fiscal Outlook*; *The Economist* (December 2017), poll of forecasters (for international comparisons)

¹⁴ East Midlands Chamber (2017), *Quarterly Economic Survey Q3* (October)

Shaping the strategy: The policy context

2.17 At national level, the Government's **Industrial Strategy** White Paper will be important in setting the policy context for the development of the SEP. The Industrial Strategy aims to "create an economy that boosts productivity and earning power throughout the UK". Alongside the strong focus on the technology 'grand challenges' within which the UK has an existing or potential leading edge, the Strategy contains a series of long term goals and specific medium term funding commitments geared around the 'five foundations of productivity':

- **ideas**, supporting R&D and innovation, especially linked with the technology 'grand challenges'
- **people and skills**, particularly focused on developing the technical education system and supporting retraining
- **infrastructure**, including transport and digital infrastructure and adaptation to electric vehicles
- **business environment**, including the rollout of 'sector deals' support for driving productivity gains within SMEs
- **places**, including through local transport network investment.

2.18 Specific proposals and commitments within the Industrial Strategy are discussed where relevant in the chapters that follow. Of particular relevance to D2N2 (and other local enterprise partnerships), the Strategy also places an emphasis on the role of 'place' in driving productivity and economic development:

A local focus within the national Industrial Strategy: Key 'place-based' measures

The Industrial Strategy contains a commitment to the development of **Local Industrial Strategies** with LEPs, intended to be "long term, based on clear evidence and aligned to the national Industrial Strategy". There is little detail within the Strategy regarding the potential content of these, but it suggests a renewed commitment by Government to LEPs – and it could mean an important role for the new SEP in setting out D2N2's vision and long-term priorities in advance of the development of Local Industrial Strategy.

Looking to the shorter term, the Industrial Strategy sets out a number of specific measures that will be relevant to D2N2. These include:

- the creation of the Strength in Places Fund to support the development of **local innovation ecosystems**, associated with the evidence contained within the Science and Innovation Audits
- funding for **transport investments** to promote local connectivity, particularly between major cities and neighbouring towns (although focused in the first instance on areas with Mayoral Combined Authorities)
- the establishment of **skills advisory panels** in LEPs and Combined Authorities to identify current and future skills needs (although it is not clear yet whether these will have substantive commissioning powers or funding)
- the suggestion of additional support for local economies below LEP or regional level, where there are specific local challenges or opportunities.

Source: HM Government (2017), *Industrial Strategy: Building a Britain fit for the future*

- 2.19 At regional level, the **Midlands Engine Vision for Growth**, published by a partnership of LEPs, local authorities, universities and businesses (including in D2N2) aims to ensure that the Midlands reaches or exceeds national GVA per head performance by 2030. The Vision has a particular focus on improving strategic connectivity (linked with High Speed 2, the Midlands Connect transport strategy and the development of East Midlands and Birmingham airports), along with measures to support innovation and enterprise (building on the Midlands Engine Science and Innovation Audit and the growth of international trade and investment¹⁵). While the November 2017 Budget contained rather modest allocations to prospective Midlands Engine investments, the Vision provides a wider regional context in which the SEP narrative can be developed.
- 2.20 Locally, in addition to the current SEP, a range of economic and spatial strategies have been prepared within D2N2, reflecting the area's diversity and complexity. These include (in D2) **Derbyshire Economic Strategy Statement** (DESS) and **Derby Economic Strategy**, and (in N2), the **Nottingham Growth Plan** and the emerging 'place strategy' for Nottinghamshire, in addition to the economic development strategies and Local Plan documents prepared at District level.
- 2.21 The strategic base was recently added to with the development of the emerging **Metro Strategy**. The Metro Strategy makes a case for increased collaboration between Derby and Nottingham to build on the complementary strengths of each city and its wider hinterland and to drive greater agglomeration benefits. In part, the Metro Strategy is focused on the opportunities presented by the new High Speed 2 station at Toton, serving both cities and the wider area, although it also highlights the benefits of jointly marketing Derby and Nottingham as an area of metropolitan scale in a competitive, post-Brexit world¹⁶. While the Metro Strategy has no formal status, the themes within it – especially linked with the complementary (rather than competing) roles of the two cities – are likely to be relevant to the new SEP.

Implications for the Strategic Economic Plan

- 2.22 Looking ahead to the next 10-15 years, we can map out, in broad terms, the long-term trends that will shape the future of D2N2's economy. As this chapter has set out, the impacts of digitalisation will be far-reaching, both in the development of new products and platforms and in the effect on existing jobs susceptible to automation. Over the long term, there will be continued pressure to reduce carbon consumption and maximise resource efficiency, and ageing demographics will produce additional social costs, as well as demand for new health and social care solutions. All of these trends point to either opportunities for, or pressures to drive up, productivity.
- 2.23 In the short run, there are considerable uncertainties, linked with Brexit and Government stability. On the other hand, the Government's new Industrial Strategy and the development of the Midlands Engine concept provide a supportive strategic context for the development of the SEP. The 'foundations of productivity' and 'grand challenges' that the Industrial Strategy

¹⁵ Midlands Engine Partnership (2017), *The Midlands Engine Vision for Growth: Our response to the Government's Midlands Engine Strategy*. The Government's Midlands Engine Strategy was published in March 2017, and included a series of specific funding commitments, including a supplementary Local Growth Fund allocation of £63 million for D2N2.

¹⁶ MetroDynamics (2017), *The economic case for the Derby-Nottingham Metro*, p.16

sets out are also largely consistent with previous Government policy, albeit with perhaps a greater willingness from Government to run a more ‘interventionist’ industrial policy.

- 2.24 This suggests a SEP that seeks to respond to and maximise the benefits of long-term technological and demographic change *and* remain relevant in the shorter term to emerging Government strategy. In this context, the remainder of this report looks at D2N2’s economic and productivity performance and considers its assets, opportunities and challenges.

3. Economic scale and strength

Summary

- D2N2's total GVA is around £46 billion. This is equivalent to around £21,250 per capita – about 80% of UK per capita GVA
- Across D2N2, GVA per head is strongest in Derby and Nottingham, where it is (in both cases) above the national average, reflecting their functions as major centres of economic activity
- Productivity in D2N2 is about 12% below that of the UK overall, at around £28.60 per hour worked. However, this is broadly comparable with levels in neighbouring LEP areas, suggesting a regional, as well as local, challenge
- Analysis of the productivity gap suggests that D2N2 has a large stock of firms that are 'just below average'. Potentially a focus on raising productivity through technology adoption may be appropriate: this will have skills and management capacity implications
- Industries with the propensity to export also tend to be more productive. Representation in these sectors, especially in higher-value activities is likely to drive productivity, and is likely to explain Derby's relatively strong productivity performance.

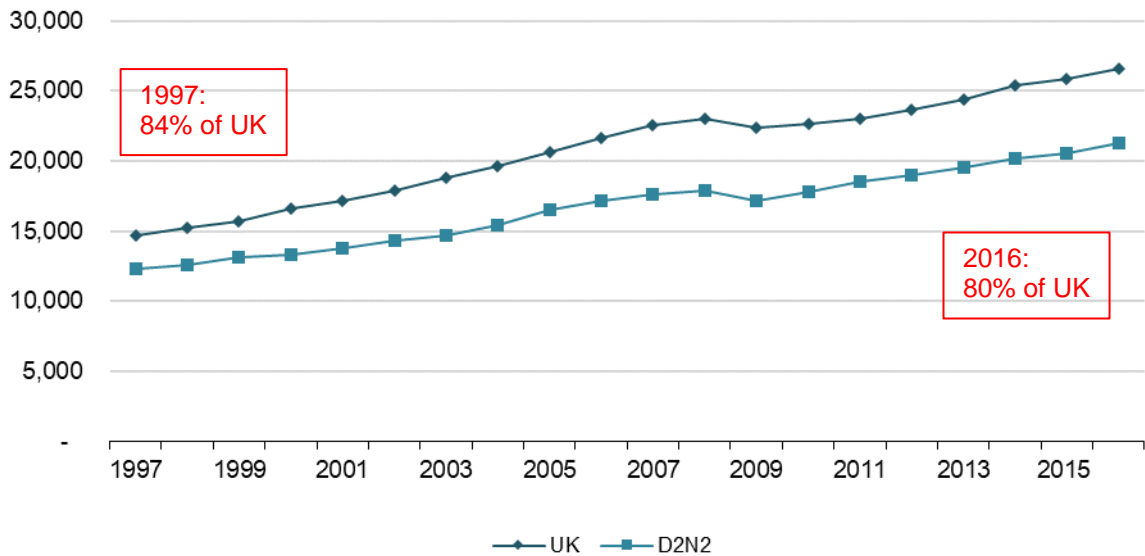
Introduction

- 3.1 In the long run, D2N2's economy will grow if its business base is able to innovate and take advantage of the economic trends described in Chapter 2 to drive up its productivity performance. This chapter looks at the overall scale and productivity of the area's economy, considering D2N2 as a whole in comparison with the rest of the country and comparator LEP areas, and looking more closely at the districts *within* D2N2.

Economic output

- 3.2 In 2016, the total GVA for D2N2 was around £46.3 billion, accounting for approximately 2.6% of national output. This equates to around £21,250 per head of population (somewhat lower than UK GVA per capita, which stood at £26,600). Reflecting the national economy, per capita GVA rose consistently in the decade to 2008, before falling back and subsequently regaining a somewhat more modest growth trajectory. Over the 1997-2016 period, D2N2's position worsened in relative terms compared with the UK as a whole (see Figure 3-1).

Figure 3-1: GVA per capita, 1997-2016 (£)



Source: ONS, Regional GVA (income approach) by local authority

- 3.3 Within D2N2, the cities of Nottingham and Derby account for around 20% and 15% of D2N2's GVA respectively. Reflecting their concentration of economic activity, GVA per capita is above the UK average in both cities, although as the earnings data in Chapter 6 suggests, many 'productive' workers live beyond the city boundaries.
- 3.4 Over the past five years, growth in D2N2 has been broadly comparable to the UK average, although per capita GVA growth has been somewhat slower in Nottingham.

Table 3-1: Gross value added

	Total GVA (2016, £m)	GVA per capita (2016, £)	GVA per capita growth, 2006- 16, %	GVA per capita growth, 2011- 16, %
Derby	7,120	27,786	27	15
Nottingham	9,060	27,852	18	8
East Derbyshire ¹⁷	5,325	18,820	36	19
South & West Derbyshire ¹⁸	9,919	19,727	23	16
North Nottinghamshire ¹⁹	8,826	18,926	24	12
South Nottinghamshire ²⁰	6,046	17,557	16	20
D2N2	46,296	21,256	21	14
Leicester & Leicestershire	23,466	22,754	20	17
Sheffield City Region	34,048	18,364	20	13

¹⁷ Bolsover, Chesterfield, North East Derbyshire

¹⁸ Amber Valley, Derbyshire Dales, Erewash, High Peak, South Derbyshire

¹⁹ Ashfield, Bassetlaw, Mansfield, Newark and Sherwood

²⁰ Broxtowe, Gedling, Rushcliffe

	Total GVA (2016, £m)	GVA per capita (2016, £)	GVA per capita growth, 2006- 16, %	GVA per capita growth, 2011- 16, %
Greater Manchester	63,673	22,886	20	16
Gtr Birmingham & Solihull	46,810	23,251	25	19
East Midlands	101,587	21,502	21	14
UK	1,747,647	26,584	23	15

Source: ONS, Regional GVA (income approach) by local authority; regional GVA by LEP

Productivity

The UK's productivity challenge...

- 3.5 The UK has a long-standing productivity challenge. UK productivity (generally defined as output per hour worked, or output per job) has historically been weaker than that of our major competitors in Europe and the United States. While the gap narrowed from the 1990s, since the 2008/09 recession it has widened: since 2008, the UK's annual productivity growth has averaged just 0.1%²¹. Particularly since 2015, successive national strategies have highlighted the 'productivity deficit' as a central economic issue, and it is at the core of the Industrial Strategy.

... and the productivity deficit in D2N2

- 3.6 In 2016, D2N2's **productivity measured as GVA per hour worked was around £28.60, about 12% below the UK average (£32.60)**. This deficit has been persistent over time, although it reflects a wider regional challenge: D2N2's productivity is largely comparable with the rest of the Midlands and the North. Of all the LEP areas in the Midlands Engine and Northern Powerhouse, only one (Cheshire and Warrington) has higher productivity than the UK as a whole.
- 3.7 However, within D2N2, there is some diversity, **with higher productivity in Derby, 'South and West Derbyshire'²² and 'South Nottinghamshire'²³**. According to the data, the Nottingham productivity picture is surprisingly weak, although it appears that this may be due to a long-standing data anomaly²⁴. Overall, while D2N2 overall reflects the general East Midlands picture, parts of the LEP perform significantly better.
- 3.8 **Over the past decade and since 2011, productivity growth in D2N2 has been broadly comparable with the national growth rate.** Between 2011-16 (i.e. the recovery period from the 2008 crisis), productivity in D2N2 grew by around 10%, in line with the UK and East Midlands growth rates, and somewhat more strongly than some comparator LEP areas.

²¹ HM Treasury (2017), *Autumn Budget 2017*, p.11

²² South and West Derbyshire consists of the districts of Amber Valley, Derbyshire Dales, Erewash, High Peak and South Derbyshire

²³ South Nottinghamshire consists of the districts of Broxtowe, Gedling and Rushcliffe

²⁴ Specifically, there is a very high concentration of employment in 'temporary employment agency' activities, which appears to be due to the effects of two large employment agencies, which considerably skew the data. NLP (2015), *Nottingham Outer HMA/ Nottingham Core HMA: Employment Land Forecasting Study*, p.8

Table 3-2: Productivity

	GVA per hour worked (2016, £)	% growth, 2006-16	% growth, 2011-16
Derby	33.40	29	9
Nottingham	23.90	11	0
East Derbyshire	29.00	27	20
South and West Derbyshire	31.10	33	19
North Nottinghamshire	26.60	20	6
South Nottinghamshire	31.40	22	13
D2N2	27.60	23	10
Leicester & Leicestershire	28.80	24	10
Sheffield City Region	27.00	21	10
Greater Manchester	29.30	20	7
Greater Birmingham & Solihull	28.90	24	9
East Midlands	28.00	22	10
UK	32.60	23	10

Source: ONS, Sub-regional productivity, LEP and NUTS 3, nominal (smoothed) GVA per hour worked

Explaining the productivity deficit

The gap in the middle...

- 3.9 Research commissioned by D2N2 LEP has analysed the ‘productivity deficit’ at individual firm level. This concluded that the productivity gap with the UK average was largely a consequence of lower productivity in ‘middle tier companies’: while D2N2 has some highly productive firms at the top of the distribution, **“there are more firms in D2N2 with productivity a little below average, and too few with productivity just above”**²⁵.
- 3.10 This suggests measures to raise productivity among the stock of moderately productive SMEs. This chimes with the conclusions of Jürgen Maier’s *Made Smarter* review cited in Chapter 2, which highlights the need to drive up adoption of new technology within SMEs in the manufacturing sector. Technical skills are likely to be an important element of this, but so is management capacity and capability, willingness to invest and awareness of the potential of new technologies and processes.

... and the regional challenge...

- 3.11 However, the general consistency of D2N2’s overall productivity with that of its neighbours in the North and Midlands suggests a wider regional dimension to the deficit. Analysis by the Centre for Cities highlights two factors that may explain relatively low productivity outside the Greater South East²⁶:

²⁵ Richard Kneller (2017), *The D2N2 Productivity Gap*, University of Nottingham

²⁶ Centre for Cities (2017), *The role of place in the UK’s productivity puzzle*

- first, **the strength of the ‘exporting’ base** as a driver for productivity. Sectors with a high propensity to export (such as manufacturing and information and communications) tend to be more productive. However, employment growth has tended to be in *less* productive sectors (such as distribution and retail). This is reflected in Derby’s relatively high productivity (linked with its extensive advanced manufacturing base), compared with Nottingham’s more service-oriented economy.
- second, **the distribution of functions *within* sectors**. While manufacturing (for instance) is a highly productive sector overall, not all elements of it are equally high value. For example, design functions might be more valuable than production, and the mix of occupations and functions (and the skills associated with them) often explain productivity differentials within sectors²⁷. Again, Derby’s concentration of high-value activities within its manufacturing base may help to explain its high productivity levels relative to the rest of D2N2.

3.12 The next chapter explores this further, looking at the sectoral composition of the economy, its business base and science and innovation assets.

Implications for the Strategic Economic Plan

3.13 There is an extensive literature analysing the UK’s ‘productivity puzzle’, the recovery from recession and strong employment growth at the same time as much weaker productivity growth than our main competitors. This brief overview of D2N2’s GVA growth and productivity performance suggests two key implications for the development of the SEP:

- **D2N2’s productivity deficit is shared with its neighbours**. As this report highlights, D2N2 also shares important strategic infrastructure and is linked with other parts of the Midlands and North through complex and overlapping functional economic areas. In this context, the regional dimension is likely to be important, particularly given the productivity focus of the Midlands Engine Vision.
- Given the technology trends described in Chapter 2, and the likely productivity gap in ‘mid-table’ firms described above, **driving technology adoption among the core of mid-tech follower firms is likely to be significant**, both in terms of driving up productivity and ensuring resilience. This is likely to involve important skills and management capacity aspects.

3.14 More broadly, there is a general consensus on the wider factors that will drive long-term productivity growth, set out in the ‘five foundations of productivity’ in the Industrial Strategy, and discussed further in the following chapters.

²⁷ SQW/ Transport for the North (2016), *Northern Powerhouse Independent Economic Review*

4. Industry: Sectors, enterprise and innovation

Summary

- There are around 76,000 active enterprises in D2N2, and the business stock has grown in recent years. However, the area's business density is lower than the UK and East Midlands averages
- In employment terms, the largest sectors are retail and wholesale and health and social work, reflecting the national picture. Manufacturing stands out as particularly concentrated in D2N2
- This is reflected in analysis of D2N2's science and innovation assets and potential, which highlights the area's strengths in 'next generation transport', as well as in life sciences, food manufacturing and energy and low carbon, linked with capabilities in the 'transformational technologies' set out in Chapter 2
- D2N2's 'consumption-driven' sectors are less productive. However, they are important employers and efforts to drive up productivity could have significant wider outcomes.

Introduction

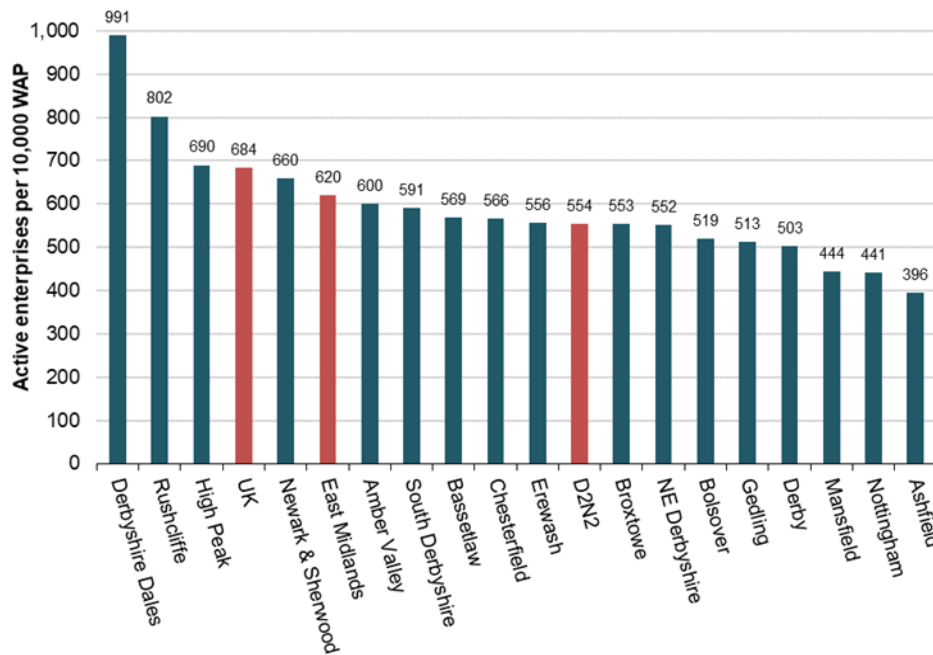
- 4.1 The business base is at the centre of the analytical framework set out in Chapter 1: ultimately, growth will be delivered through existing firms, new starts and inward investors. This chapter analyses D2N2's industrial structure and its innovation potential.
- 4.2 First, it looks at the dynamism of the local economy through an analysis of business starts and survival rates. It then considers the sectoral composition of the economy, highlighting areas of strength in light of the national approach to 'sector deals', and setting out some of the challenges associated with defining 'priority sectors'. Finally, it considers D2N2's key science and innovation assets and innovation potential, drawing in particular on the Science and Innovation Audit currently in preparation.

D2N2's business base

- 4.3 In 2016, there were some **76,000 active enterprises** in D2N2, a quarter of which (around 18,000) were located in the two cities of Derby and Nottingham.
- 4.4 Nationally, there is a correlation between GVA per head and an area's overall 'business density' (the number of active enterprises per 10,000 of working age population): put simply, GVA per head tends to rise with the scale of the business stock²⁸. In this context, **D2N2's business density is substantially lower than the UK figure**, and somewhat lower than that of the East Midlands (554 per 10,000, compared with 684 and 620 respectively). This relative shortfall has been consistent over time.
- 4.5 However, within D2N2, there is considerable local divergence. The lowest business densities are in Ashfield, Mansfield and Nottingham; the highest in Rushcliffe and Derbyshire Dales:

²⁸ D2N2/ SQW (January 2018), *D2N2 Strategic Economic Plan: Business Demography*

Figure 4-1: Business density, 2016



Source: ONS, Count of Active Enterprises, 2016

- 4.6 Between 2011 and 2016, the number of active enterprises in D2N2 increased by 15% (approximately 9,900 enterprises). Within D2N2, all districts experienced growth in the enterprise stock. However, the rate of growth was somewhat slower than in the UK as a whole or the East Midlands (21% and 18% respectively). Growth was higher than the UK average only in Derby, Nottingham, Broxtowe and Rushcliffe²⁹.

Business births, deaths and survival

- 4.7 After five years, around 44% of those businesses in D2N2 established in 2011 were still operational, approximately the same as the UK and East Midlands survival rates³⁰. Within D2N2, survival rates were somewhat higher in Rushcliffe, Broxtowe and High Peak.
- 4.8 In 2016, enterprise births accounted for around 13% of the overall business stock, with deaths accounting for around 10%. Both the birth and death rates were marginally lower than the UK average. Within D2N2, birth and death rates are broadly similar across districts, although birth rates are a little higher in Derby and Nottingham than elsewhere.

Business size

- 4.9 As elsewhere in the country, D2N2's business stock is dominated by smaller employers. Around 82% of local businesses employ nine or fewer employees (compared with a national

²⁹ The data also show very high growth in Bolsover, but this appears to be a data anomaly

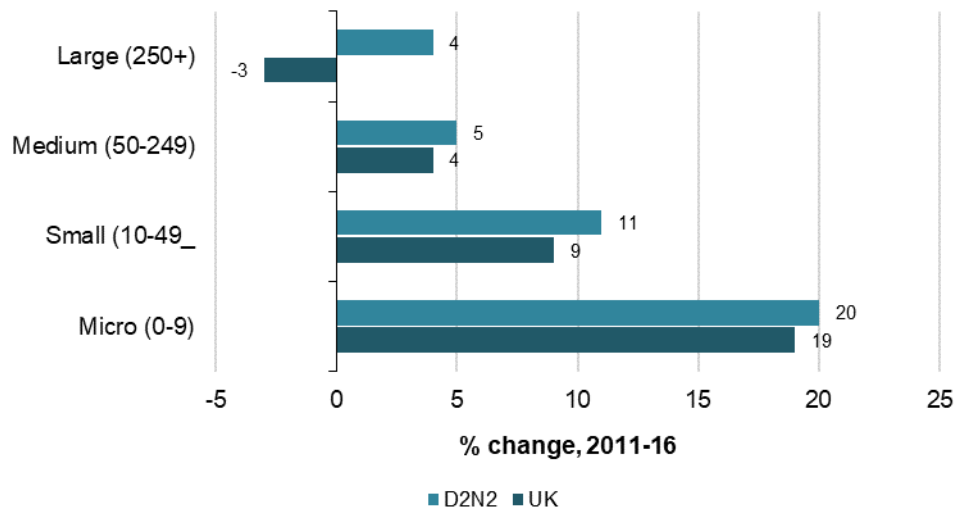
³⁰ It should be noted that 'survival' refers to businesses that remain in separate existence: there will be some successful firms that have not 'survived' as separate businesses, but have been acquired or merged

figure of 84%), with micro businesses enjoying a somewhat smaller share of the business stock in Ashfield, Chesterfield, Derby, Mansfield and Nottingham than in other parts of D2N2.

- 4.10 In the five years to 2016, growth was fastest among micro businesses, with some reduction in the presence of larger firms³¹. This is consistent with a long-term national trend, which has seen a steady rise in the number of micros.

Figure 3: Change in business stock by employment size band, 2011-16

Figure 4-2: Change in business stock by employment size band, 2011-16



Source: ONS, Local Business Count

Sectoral composition

Defining priority sectors

Some challenges...

- 4.11 Understanding our sectoral composition and the opportunities and challenges associated with different industries is critically important to local economic analysis. Businesses generally understand sectoral definitions, and strong employment, productivity and trade data exists at the sectoral level. However, in identifying 'priority sectors', three considerations are useful to bear in mind:

- First, **sectors are not perfect units of analysis**. On the one hand, they increasingly overlap: manufacturers may, for instance, gain more value from design and development and from servicing than they do from the manufacturing process itself. On the other, new activities (such as 'digital' and 'low carbon') are impossible to satisfactorily define using standard industrial classifications, and often encompass activities that are very diverse; and supply chains will often be cross-sectoral.

³¹ Note that a reduction in the number of large businesses may indicate employment downsizing within firms, rather than necessarily a loss of individual businesses

- Second, **sectors may be defined as priorities for a range of reasons**. For example, a short-to-medium term plan for vocational skills provision might prioritise sectors based on local labour demand over the plan period. A strategy focused on long-term growth might prioritise relatively small, but high-value and productive sectors – or it may focus on measures to drive productivity in the existing industrial base. All these approaches are valid – but it depends what prioritisation is for.
- Third, as set out in Chapter 2, many sectors will be subject to the same **drivers of change**, linked (for example) with the impact of enabling technologies.

The Government's approach...

4.12 Despite these challenges, the Industrial Strategy takes a sector-focused approach, through the conclusion of '**sector deals**' to "focus on sector-specific issues [to] create significant opportunities to boost productivity, employment innovation and skills"³². An initial round of sector deal partnerships has been announced:

- Life sciences, building on the *Life Sciences Industrial Strategy* published in September
- Construction
- Artificial Intelligence, directly reflecting one of the key technology challenges identified in the Industrial Strategy
- Automotive, focused on "*ensuring that the UK continues to reap the benefits from the transition to ultra-low and zero-emission vehicles*".

4.13 Two of these – life sciences and automotive – have already resulted in the publication by Government of sector deal documents.

The Automotive Sector Deal

In January 2018, the Government published the Automotive Sector Deal. This sets out a series of investments supported by Government and industry, particularly focused on the ability of the automotive sector to respond to the four 'Grand Challenges' outlined in the Industrial Strategy.

Key investments include the expansion of the Advanced Propulsion Centre. The University of Nottingham is the 'power electronics spoke' for the APC, with current projects including the development of GKN's e-Drive system platforms. Elsewhere, the Sector Deal commits funding to testing infrastructure for connected and autonomous vehicles, improving productivity in the automotive supply chain and supporting the transition to ultra-low and zero emission vehicles.

Source: HM Government/ Automotive Council (2018), Industrial Strategy: Automotive Sector Deal

4.14 Further Sector Deals are expected to be announced in 2018: within the Industrial Strategy Green Paper published earlier in 2017, the Government also highlighted the nuclear industry and creative industries, as well as existing work in relation to aerospace, food and farming and tourism³³. In general, the approach seems to be opportunity-led, focusing on areas of

³² HM Government (November 2017), *Policy Paper: Introduction to Sector Deals*

³³ HM Government (January 2017), *Building Our Industrial Strategy: Green Paper*, p.103

economic activity where there is strong business leadership, 'traction' in developing a business-Government partnership and the potential to drive productivity growth³⁴.

... and D2N2's current priority sectors

- 4.15 Within the current SEP, D2N2 identifies eight 'priority sectors': transport equipment manufacturing; life sciences; food and drink manufacturing; construction; visitor economy; low carbon; transport and logistics; and creative industries³⁵. There is considerable overlap between these sectors and those that the Government has identified within the Sector Deals process.

Analysing D2N2's sector composition

- 4.16 There are several lenses through which D2N2's sectoral composition can be considered. In the paragraphs that follow, we look at four dimensions in turn: employment; productivity; GVA; and the direction of growth.

Employment

- 4.17 There were 960,000 jobs in D2N2 in 2016. Table 4-1 shows the distribution of employment by sector, as well as the location quotient, which measures local concentration relative to the UK as a whole³⁶.
- 4.18 In common with the rest of the country, the largest concentrations of employment were in wholesale and retail trades and vehicle repairs, and in health and social work activities. Employment in both sectors mostly caters to local demand, and while both are large, neither is particularly specialised in D2N2.
- 4.19 Two important sectors stand out from the table:
- First, **manufacturing employment is highly concentrated**, accounting for 13% of all employment, with a location quotient of 1.7. **In parts of D2N2, it is very highly concentrated**, especially in Derby and Derbyshire (including some mainly rural parts of the county) and in parts of North Nottinghamshire³⁷. This reflects both the strength of the automotive, rail, aerospace and other engineering sector around Derby, as well as high representation in food processing and manufacturing in areas such as Amber Valley, Derbyshire Dales and Newark and Sherwood³⁸. Manufactured goods also accounted for around 91% of D2N2's exports of goods (around £10.6 billion) in 2015³⁹.
 - Second, at the other extreme, **finance and insurance activities**, a nationally significant sector in which the UK overall has relative strengths, is very under-

³⁴ 'Artificial intelligence' is, for example, more a technology than a sector – but the Sector Deals are based less on strict sector definitions, and more on where Government and groups of businesses have identified opportunities.

³⁵ D2N2 (2014), *Strategic Economic Plan*, p.29

³⁶ Location quotient by sector shows the concentration of employment in a given sector in D2N2 relative to GB e.g. an LQ of 2.0 means that employment in this sector is 2x as concentrated in D2N2 as in GB overall

³⁷ There is a manufacturing employment LQ of greater than 2.0 in Amber Valley, Ashfield, Bassetlaw, Derby, Derbyshire Dales, Erewash, High Peak, North East Derbyshire and South Derbyshire

³⁸ Electricity and gas supply is also highly concentrated, although overall employment numbers are small. This local concentration mainly results from power station locations, particularly in Broxtowe (Ratcliff-on-Soar)

³⁹ HMRC, Regional Trade experimental data, 2015

represented in employment terms in D2N2. Despite the presence of some major players, such as Experian and Capital One in Nottingham, this low level of concentration features in every district across D2N2.

Table 4-1: Sector employment in D2N2 and location quotient (relative to UK), 2016

	Jobs	% of total	LQ
Agriculture, forestry and fishing	1,000	0%	0.1
Mining and quarrying	1,500	0%	0.9
Manufacturing	126,000	13%	1.7
Electricity, gas, steam and air conditioning supply	7,000	1%	1.8
Water supply; sewerage, waste management and remediation activities	6,000	1%	1.0
Construction	51,000	5%	1.1
Wholesale and retail trade; repair of motor vehicles and motorcycles	160,000	17%	1.1
Transportation and storage	39,000	4%	0.9
Accommodation and food service activities	72,000	8%	1.0
Information and communication	25,000	3%	0.6
Financial and insurance activities	10,000	1%	0.3
Real estate activities	12,000	1%	0.7
Professional, scientific and technical activities	59,000	6%	0.7
Administrative and support service activities	98,000	10%	1.2
Public administration and defence; compulsory social security	40,000	4%	1.0
Education	84,000	9%	1.0
Human health and social work activities	134,000	14%	1.1
Arts, entertainment and recreation	20,000	2%	0.8
Other service activities	16,000	2%	0.8
Total	960,000	-	-

Source: SQW analysis of open access Business Register and Employment Survey

GVA and productivity

4.20 The D2N2 economy can also be analysed by considering the contribution of different sectors to overall GVA. This shows that manufacturing in particular tends to account for a higher proportion of GVA than of employment – in other words, it employs fewer people, but generates a lot of output. This is particularly visible at local level: for example, manufacturing accounts for over 30% of Derby’s total GVA.

4.21 Recent research for D2N2 has also looked at the **productivity performance** of different sectors in the area⁴⁰. This found that in motor vehicles manufacturing, the sector is both more productive than the rest of the D2N2 economy *and* the industry in D2N2 is more productive than the equivalent sector elsewhere in the country.

⁴⁰ SQW/ D2N2 (2017), *Sectoral Analysis Report*

4.22 Several lower productivity sectors – such as Education, Retail, Construction, Health, and Business Support Services – account for a relatively large share of D2N2 jobs and GVA. Regardless of sector policy, these sectors will *always* account for a substantial share of employment and GVA, because they incorporate ‘essential’ services and are driven by local demand. However, recent research for D2N2 by Nottingham Trent University highlighted the extent to which **relatively low productivity in ‘under-performing’ sectors (such as business administration and support) acts as a drag on wage levels**. In response, it recommended a focus on raising productivity in moderately-performing firms in relatively unproductive service sectors: a policy recommendation that is broadly consistent with the approach taken by the Maier Review in respect of manufacturing⁴¹.

Growth: Direction of travel

4.23 Finally, we can look at **how different sectors are growing**. Of the major employment sectors, public administration saw the greatest contraction in the five years to 2015, reflecting the impact of reduced public spending. Business, professional and financial services saw the strongest gains. However, manufacturing also saw modest (2%) employment growth over the period, showing considerable resilience in the context of long-term falls in manufacturing employment even as output rises.

4.24 Looking in greater detail at future projections, recent sectoral analysis for D2N2 illustrates anticipated GVA growth in both highly productive and less productive sectors. However, reflecting the impact of automation, some highly productive and specialised sectors are forecast to see significant falls in employment despite rising GVA.

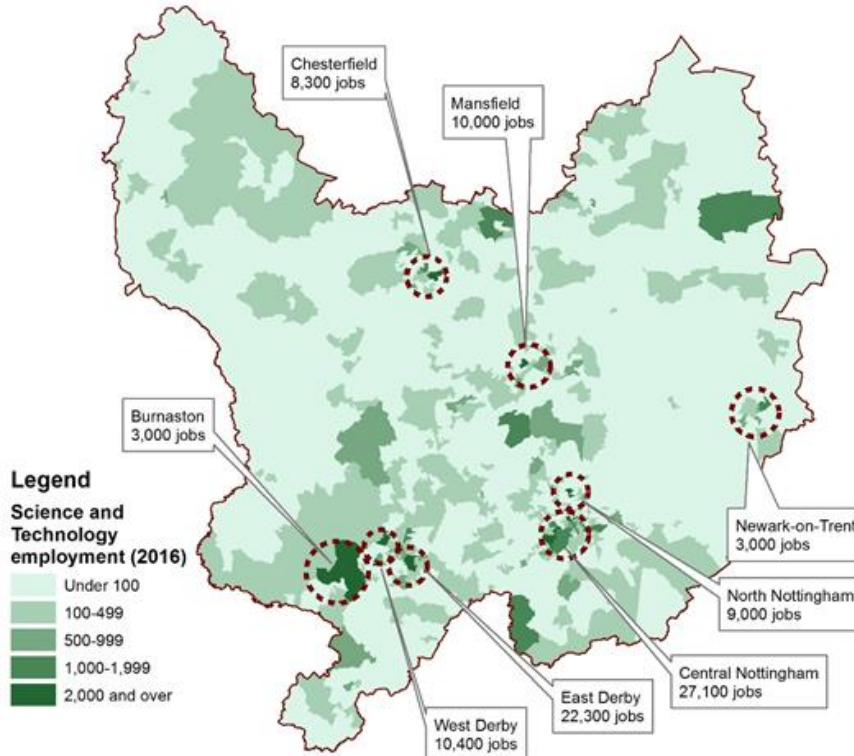
The strength of the science and innovation base

4.25 The develop a greater understanding of the potential within the university and commercial research base for driving regional economic growth, the Government has sponsored a series of Science and Innovation Audits (SIAs). Building on the Midlands Engine SIA prepared in 2016, work is underway to prepare an SIA focused specifically on D2N2’s strengths and opportunities.

4.26 The emerging D2N2 SIA highlights a number of significant science and innovation assets in the area. From an employment perspective, around one in five jobs in D2N2 are within ‘science and technology’ sectors, as defined by the Office for National Statistics, with particular concentrations around Derby and Nottingham:

⁴¹ Nottingham Trent University/ RSA (2017), *Refreshing the Strategic Economic Plan: The case for inclusive growth*, p.17

Figure 4-3: Science and technology employment in D2N2 (2016)



Source: Produced by SQW 2017. Licence 100030994. Contains OS data © Crown copyright [and database right] [2017] and BRES data

- 4.27 From a **university research** perspective, the University of Nottingham is of international significance: according to the 2014 Research Excellence Framework, the University is ranked 13th for ‘research power’ in the UK. Nottingham Trent University and the University of Derby are also significant institutions, generally from a more applied perspective. Alongside the HEIs, there are several major innovative private sector firms. These include Rolls Royce, Bombardier, JCB and Toyota in manufacturing and engineering; Walgreen Boots in pharmaceuticals and Experian in financial and business services.
- 4.28 Some of these major players dominate the relationship with publicly funded innovation activity. Analysis of Innovate UK funding indicates that of the £134 received in D2N2 between 2010 and 2017, 65% went to the University of Nottingham and a further 14% to Rolls-Royce. However, there were 290 additional recipients of Innovate UK funding across D2N2, indicating a fairly large cohort of innovation active firms across the area.

Opportunities for growth

- 4.29 The emerging Science and Innovation Audit identifies three ‘enabling competencies’ across D2N2, in which the area has genuine strengths:
- **Advanced manufacturing and engineering:** D2N2 has ‘world class’ Industry 4.0 strengths, particularly focused on Derby and its strong manufacturing base. The Midlands Engine SIA highlights an extensive cluster of supply chain companies associated with Derby’s engineering economy
 - **Digital technologies and data:** In terms of the research base, the University of Nottingham and Nottingham Trent University have strengths in exploiting data: of

particular relevance are the University of Nottingham’s Horizon Digital Economy Research Institute, and MidPlus, a regional high performance computing laboratory to which the University contributes. The advanced manufacturing base, as well as the area’s life science and (mostly in Nottingham and on a smaller scale) financial services sector also contribute to the area’s data capabilities.

- **Systems integration**, particularly associated with the D2N2’s strengths in the integration of complex transport and energy systems, although the adoption of a ‘whole systems’ view is also becoming increasingly important within our advanced manufacturing base.

4.30 Building on these capabilities, the emerging SIA highlights four key areas for science and innovation-led growth (see Table 4-2 for details).

Table 4-2: Science and innovation-led market opportunities

Next Generation Transport	Design and production in the aerospace, automotive and rail sectors, recognising the common challenges and opportunities they face. Specific areas of focus include advanced materials/processes, digital simulation/modelling and digital manufacturing, and strengthening supply chains
Life Sciences	Both biotech and medtech, as well as broader areas of human health. This includes a particular spatial opportunity around Nottingham’s developing life sciences cluster
Future Food Processing	Academic research into food production, and innovation in products and processes by SMEs and large companies across multiple sub-sectors. Specific sub-sectors of focus include: chocolate and confectionary, coffee, brewing, meat and poultry, and bread.
Energy and Low Carbon	Excellence in academic research, important employers, and the application of innovative low carbon technology in demonstrator projects.

Source: SQW

Implications for the Strategic Economic Plan

4.31 Broadly, the ‘priority sectors’ identified in the 2014 SEP remain relevant, and there is considerable overlap between them and those sectors identified within the Industrial Strategy and the ‘market opportunities’ emerging from the D2N2 Science and Innovation Audit. However, four points are worth taking into consideration:

- First, **‘sectors’ and ‘technologies’ are frequently blurred**, particularly given the cross-cutting nature of digital technology drivers: strict sector definitions may not always be helpful as technologies increasingly converge. The Government’s approach to sector deals on the one hand, and the ‘grand challenges’ on the other recognises this, acknowledging that sector boundaries are not rigid and that supply chains extend throughout the economy. There is scope to build on this approach in the SEP
- Second, while there is strong evidence that D2N2 has a world class manufacturing base, and that this is a national asset, **high levels of manufacturing employment do not, in all parts of D2N2, translate into higher productivity**. Improving productivity and resilience beyond the core of international standard manufacturers is likely to be important
- Third, regardless of which sectors are priorities in terms of their ability to deliver high productivity and high-value jobs, **consumption-based sectors will always be**

important in employment scale terms. Raising productivity in these sectors (through better leadership, management and skills) could have wider social as well as economic benefits.

- Fourth, while D2N2's business base is growing, **business density is relatively low** (and is very low in parts of the area). There is therefore likely to be a case for increasing the scale of the business stock through entrepreneurship and inward investment, and for encouraging 'micro' businesses to scale up, as part of a wider strategy aimed at supporting productivity and economic growth. This should also assist in building the resilience of the economy to further loss of employment from larger businesses.

5. Places: Infrastructure and spatial economy

Summary

- Over the next 20 years, population and employment growth will be especially focused in the south of D2N2. This is likely to reinforce the relative significance of Derby and Nottingham within the D2N2 economy
- Currently, strategic transport infrastructure is reasonable – but falls short of the connectivity suggested by D2N2’s position at the centre of England, particularly in terms of east-west links
- Links with neighbouring areas are strong. These are likely to be reinforced by investment in High Speed 2 and the delivery of the strategy outlined by Midlands Connect. This suggests that a strong ‘outward facing’ dimension to the SEP will be important – both in terms of the rest of the UK and beyond.

Introduction

5.1 The preceding chapters have highlighted D2N2’s scale and diversity, and that the role different places play in the economy is influenced by their connectivity and accessibility to other centres of economic activity, as well as by their current economic asset base and historic patterns of growth. Making the most of the sectoral and technological opportunities outlined earlier will also rely on ensuring that the right infrastructure is in place.

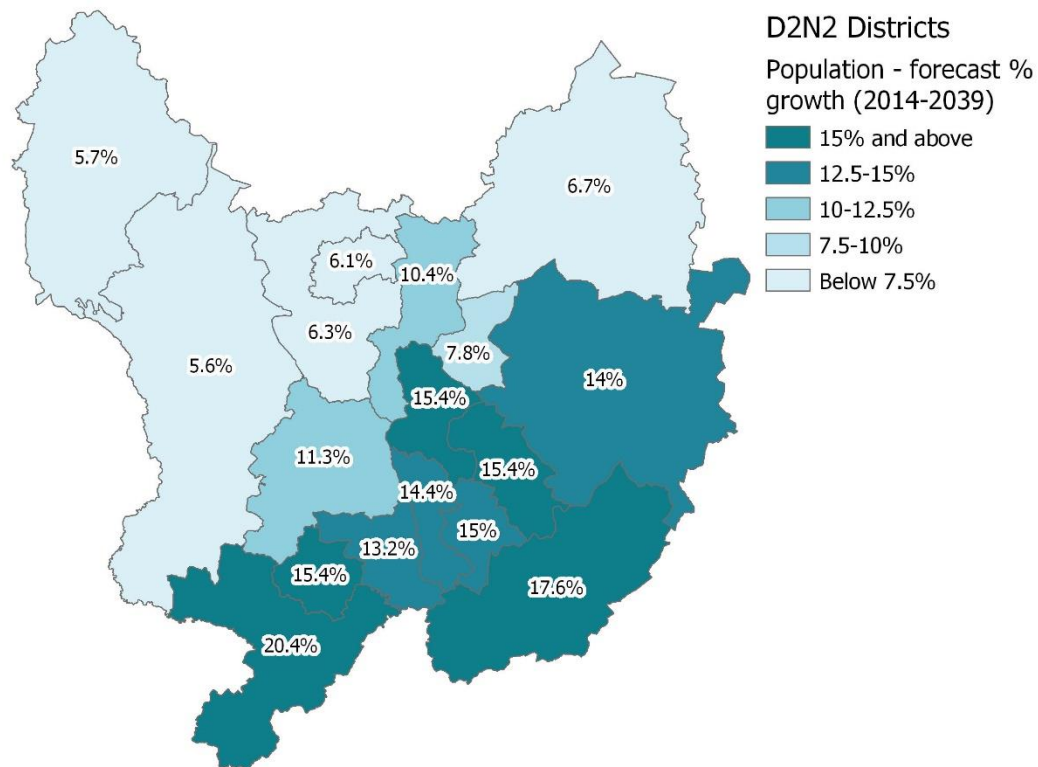
5.2 This chapter considers:

- The pattern of planned growth
- Travel flows across D2N2, and relationships with neighbouring centres
- The current stock of strategic transport infrastructure...
- ... and the implications of forthcoming infrastructure development associated with High Speed 2
- Digital infrastructure
- Environmental constraints and assets.

Planned growth

5.3 Over the next 20 years, population growth in D2N2 will be especially focused on the south of the area. Rushcliffe and South Derbyshire are anticipated to see the greatest increase, as illustrated in Figure 5-1. This reflects the growth of the cities and (especially in parts of Derbyshire) the strong environmental constraints on growth. This will place much of the focus of future housing delivery (and therefore potentially the infrastructure needed to unlock it) on the southern part of D2N2.

Figure 5-1: Forecast population growth, 2014-39



Source: ONS, Sub-national population projections

Current economic areas

5.4 The 2014 SEP subdivides D2N2 into four broad economic areas:

- Nottingham, plus south Nottinghamshire and east Derbyshire
- Derby, South Derbyshire and the Amber Valley
- North Nottinghamshire and North East Derbyshire (including Chesterfield and Bolsover)
- The wider Peak District.

Travel patterns

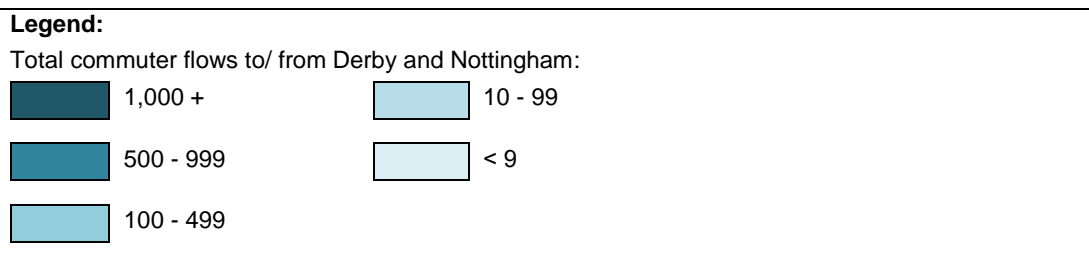
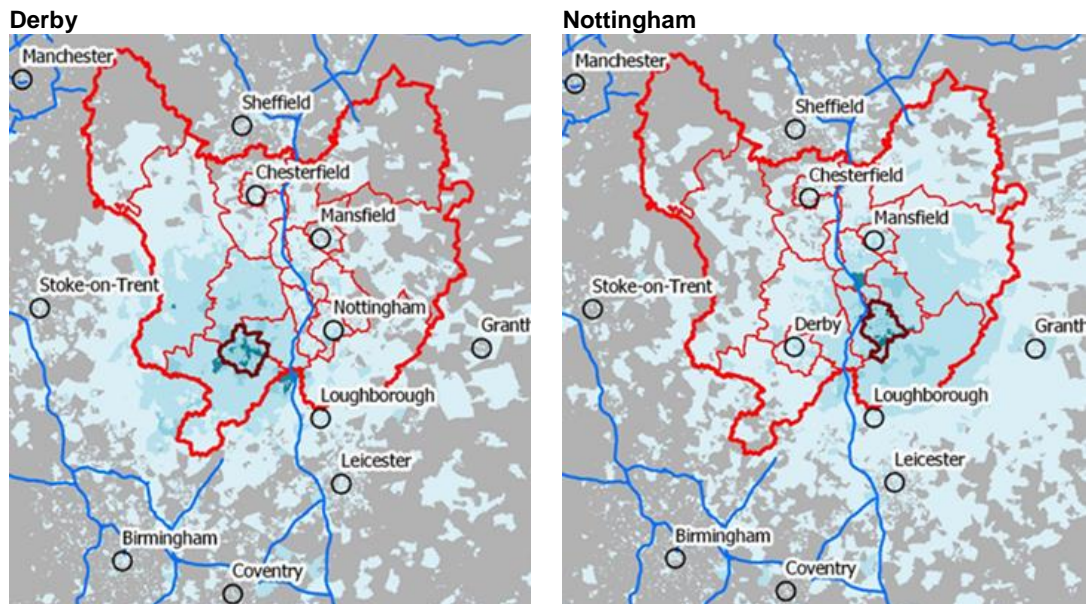
5.5 Analysis of travel-to-work patterns provides one way to consider D2N2's economic geography. Of those residents in D2N2 who are working, 84% work within D2N2, although this masks quite complex commuting patterns and significant outflows to neighbouring LEP areas from some districts.⁴²

⁴² ONS, Census 2011: Location of usual residence and place of work

5.6 Following the 2011 census, analysis for the Office for National Statistics identifies eight ‘travel to work areas’ (TTWAs) entirely or partly within D2N2⁴³. Looking more closely at travel-to-work patterns:

- **Nottingham’s** footprint is extensive, reflecting the city’s scale as a major economic centre, and its underbounded geography. It is the largest commuter destination for Broxtowe, Gedling and Rushcliffe, and – to a lesser degree - Ashfield and Erewash.
- **Derby’s** commuter footprint is somewhat less extensive, extending mostly to Amber Valley, South Derbyshire and Erewash.
- Commuter flows between Derby and Nottingham (and vice-versa) are low: with the exception of Erewash, which has almost equal numbers of out-commuters to the two cities, the Derby and Nottingham hinterlands are (currently) quite distinct.

Figure 5-2: Derby and Nottingham: Commuter footprints



Source: Produced by SQW 2017. Licence 100030994. Contains OS data © Crown copyright [and database right] [2017] Census 2011. Data based on census Output Areas

- the **other main inter-district flows** within D2N2 are from North East Derbyshire to Chesterfield; from Mansfield to Ashfield (and to a lesser extent, in the opposite direction); and from Nottingham to Rushcliffe

⁴³ These are: Buxton, Chesterfield, Derby, Mansfield, Nottingham, and Worksop and Retford; plus Burton-on-Trent (including part of South Derbyshire), Manchester (including western High Peak), Lincoln (including Newark), and Sheffield (including Dronfield and part of Derbyshire Dales). ONS (2011), Travel to work areas

- **there are also significant travel-to-work relationships beyond D2N2.** These are most pronounced in the north of the area, particularly from North East Derbyshire and (to a lesser extent) Bassetlaw and Chesterfield to South Yorkshire; and from High Peak to Greater Manchester. There is also a large outflow from South Derbyshire into Staffordshire.

Housing market areas

5.7 Government analysis in 2010 identified three main housing market areas in D2N2, focused on Nottingham, Derby and North Nottinghamshire/North East Derbyshire (with part of High Peak identified with Manchester's HMA)⁴⁴. Since then, local authorities within D2N2 have defined their strategic housing market areas through the planning process, approximating for administrative boundaries. A brief analysis of recent housing and economic market assessments highlights in particular:

- **Nottingham's market area is extensive.** Combined, the 'core' Nottingham housing market area (extending to Broxtowe, Erewash, Gedling and Rushcliffe, as well as Nottingham), and the 'outer' HMA (Ashfield, Mansfield and Newark and Sherwood) has a combined population of nearly 1.4 million, over half of the population of the whole D2N2 area⁴⁵.
- **Derby's housing market area is somewhat more constrained,** extending to Amber Valley and South Derbyshire, although functional links extend to neighbouring districts and beyond D2N2⁴⁶.
- **the North Derbyshire and Bassetlaw market area has strong market links to Sheffield City Region,** although household movement appears to be quite localised⁴⁷.

Infrastructure

Strategic transport

5.8 **Generally, strategic north/south transport links are good.** In terms of the road network, the area is served by the M1 and, to the east, the A1. East/west road connections, including access to the M1 and A1 have also improved in recent years, with (for example) the dualling of the A46. The recent package of Local Growth Fund investment is also helping to relieve constraints on the local network.

5.9 Similarly, **southbound rail connectivity is generally good, and north/south connectivity is good in parts.** Newark is less than 90 minutes from London Kings Cross via the East Coast Mainline, with Nottingham, Derby and Chesterfield connected to London via the Midland Mainline. However, indirect connections weaken accessibility in some places (for example to Mansfield, Ashfield and Worksop via the Robin Hood Line). East/west connectivity is also limited, with (for example) relatively slow cross-Midland services to Birmingham and Crewe.

⁴⁴ CLG (2010), *Recommended housing market area boundaries: Implications for spatial planning*

⁴⁵ NLP (2015), *Nottingham Core HMA and Nottingham Outer HMA: Employment Land Forecasting Study*, p.5

⁴⁶ GL Hearn/ Amber Valley, Derby and South Derbyshire (2013), *Derby HMA Strategic Housing Market Assessment Update: Final Report*

⁴⁷ GL Hearn (2013), *North Derbyshire and Bassetlaw Strategic Housing Market Assessment: Final Report*

Strategic infrastructure assets in neighbouring LEP areas are important. In particular, D2N2's locally accessible air connectivity is via East Midlands Airport, located just beyond the LEP boundary in Leicestershire, and (to the north) via Sheffield-Doncaster, located within the Sheffield City Region.

Digital connectivity

- 5.10 As is the case elsewhere in the UK, D2N2 is benefiting from Government investment to support the rollout of broadband infrastructure: by June 2017, the two programmes in the area (Digital Derbyshire and Better Broadband for Nottinghamshire) had delivered superfast broadband to around 92% of contracted premises⁴⁸. Challenges remain in rural parts of D2N2, particularly in rural Derbyshire, given the area's topography, although the delivery of a universal service is widely recognised as a priority given the increasing remote working opportunities presented by digital technology. Looking to the future, demand for faster speeds is likely to grow rapidly, although it is expected that further investment in ultrafast will have to be delivered through the market.

Environmental infrastructure

- 5.11 D2N2 contains significant environmental assets. These include the internationally important Peak District National Park, as well as the National Forest, and much of the area is covered by environmental designations, including the Nottingham-Derby Green Belt.
- 5.12 Overall, D2N2's environmental assets present a substantial economic opportunity (both in terms of the visitor economy and the wider 'quality of life' offer important in investment marketing). However, recent research has focused on the need for a more coordinated approach to maintain quality (and the current economic benefits derived from it) in the light of wider development pressures⁴⁹.

Looking to the future: Major planned investments

- 5.13 The major infrastructure investment taking place over the period of the new SEP will be in **High Speed 2**. Phase 2b, connecting Birmingham with Leeds via the East Midlands is expected to be completed in 2033, with a new 'East Midlands Hub' station at Toton, in Broxtowe. HS2 Ltd's recent report on the economic benefits of High Speed 2 strongly focuses – following the general direction of the Industrial Strategy – on the opportunities that it presents to increase productivity by better connecting the "polycentric East Midlands region", within D2N2 and beyond⁵⁰. More broadly, HS2 will offer substantially improved cross-Midlands connections, as well as North-South links.
- 5.14 HS2 is being developed alongside the **Midlands Connect** transport strategy, which sets out a series of (additional) measures to improve strategic transport infrastructure across the region. The Midlands Connect strategy identifies Nottingham and Derby as a 'strategic

⁴⁸ DCLG (2017), BDUK – Table of local broadband projects

⁴⁹ Lowland Derbyshire and Nottinghamshire Local Nature Partnership (2017), *Trent Valley Vision: Economic Assessment*.

⁵⁰ HS2 Ltd (2017), *HS2: Getting the Best out of Britain*, p.65

economic hub', along with three other locations in the Midlands. It also sets out a series of broadly defined 'intensive growth corridors', two of which are particularly relevant to D2N2⁵¹:

- **Nottingham and Derby to the North**, extending to Mansfield, Chesterfield, Sheffield and beyond
- **Nottingham – Leicester – Coventry – Warwick**, broadly along the A46 corridor.

5.15 In the short-to-medium term, the Midlands Connect strategy outlines a number of early priorities, in particular improvements to Birmingham – Nottingham rail services, and investigation of multi-modal connectivity at Toton, in advance of the development of HS2. More generally, Midlands Connect provides a wider case for investment in transport infrastructure linked with the broader Midlands Engine proposition, of which D2N2 is a central component.

Implications for the Strategic Economic Plan

5.16 The geography of growth, its constraints, and the infrastructure requirements that flow from it are complex. However, at strategic level, the brief overview above highlights several issues for the new SEP to take into consideration:

- First, **future growth across D2N2 is quite concentrated in the south of the area** (and to some extent, this is inevitable, given the environmental limits to growth, particularly in rural Derbyshire). This is likely to reinforce the roles of the main cities as focal points for growth: the wider Nottingham HMA for example already accounts for over half D2N2's population, and this proportion will increase over time
- However, despite the growth of the cities (and the growth in their working age populations, as outlined in Chapter 2), **current functional links between Derby and Nottingham appear to be relatively weak**. This is despite the general complementarity of the two cities' assets and the potential for the East Midlands Hub to benefit both cities. Given growth across both cities' market areas and shared infrastructure, the case for a strategy focused on enabling both to be 'more than the sum of their parts' would appear to be strong.
- More broadly, **the wider East Midlands context is important**. Some of D2N2's critical infrastructure is outside the area's boundaries (e.g. East Midlands airport, the life sciences campus at Charnwood or the High Value Manufacturing Catapult within the Sheffield City Region) or on the edge of it (e.g. East Coast Main Line). Looking to the future, HS2 and, in the shorter term, the wider measures within the Midlands Connect strategy, will be vital in developing better connections to Birmingham and the rest of the Midlands Engine.
- In the north of D2N2, links to Sheffield City Region are strong, and will continue to be so as Sheffield develops as a regional centre. However, **the economic development of places in the north of D2N2 will depend both on points north and south** (e.g.

⁵¹ Midlands Connect (2017), *Midlands Connect Strategy: Powering the Midlands Engine*

in the context of the development of the M1 corridor, and connectivity improvements to enable access to the strategic rail network)

- This suggests a strong 'outward facing' dimension to the SEP, focused on shared assets and potential with neighbouring LEPs and beyond.

6. People: Skills and the labour market

Summary

- Economic activity and employment rates in D2N2 are high. Unemployment has fallen for several years and is currently at historically low levels
- However, growth in earnings has been low, and earnings generally in D2N2 are lower than in Britain as a whole
- This is reflected in D2N2's occupational profile: there are fewer jobs in high paying occupational groups.
- However, demand is rising for people in skilled technical occupations, and skill shortage vacancies particularly relate to 'core technical' and 'semi-technical roles
- Qualifications lag behind Great Britain as a whole, especially at higher levels. However, there is substantial variance at district level
- There are challenges within D2N2 related to educational attainment and the performance of the education system. These persist even in areas where the economy is relatively buoyant, and are a risk for the future skills supply
- Looking to the future, the Government's reforms to technical skills provision are substantial and long term. Following the Industrial Strategy, there is also the potential for a strengthened role for LEPs in the skills system

Introduction

- 6.1 Developing D2N2's economy around those technologies and sectors with the greatest potential for growth will depend on generating an increasingly skilled and agile workforce. In this context, this chapter sets out an overview of the area's labour market. First, it sets out recent economic activity and employment data, followed by an analysis of current and forecast occupational demand, workforce qualification levels and skills gaps identified by employers. Finally, it summarises some of the changes taking place within the skills system, particularly relating to technical qualifications, and outlines the implications for the new SEP.
- 6.2 Further analysis of the labour market data is set out in the D2N2 *State of the Economy* report, on which this chapter draws substantially.

Economic activity

- 6.3 Economic activity measures the proportion of the working age population that is theoretically available for work, including all those in employment, people that are self-employed and those who are unemployed and seeking work.
- 6.4 D2N2's economic activity rate in 2016/17 stood at around 76%, slightly worse than the national and East Midlands averages. Activity rates in Nottingham are much lower (64%) than in the rest of the D2N2 area, perhaps to some extent accounted for by the city's large student population⁵².

⁵² ONS, Annual Population Survey

Employment, earnings and occupations

Employment and unemployment

- 6.5 **The employment level in D2N2 is high**, both historically and in comparison with the rest of the country.
- 6.6 After 2010, unemployment levels rose rapidly. However, they plateaued at a level below the unemployment rates seen in previous economic downturns, and subsequently fell sharply. Currently, around 44,700 people are unemployed in D2N2 (about 4.2% of the workforce, compared with over 9% in 2011)⁵³. This is slightly below the national unemployment rate. Variations between local authority area are substantial, with Derbyshire Dales and Nottingham at the lower and upper end of the distribution respectively, although the consistent downward trend is visible everywhere. There are however risks to this, associated with the likelihood of lower economic growth over the next couple of years, and the potential for reduced consumption in response.

Earnings

The low wage paradox...

- 6.7 Despite historically high employment, productivity growth has been low (see Chapter 3), wages have been generally flat and the incidence of low pay has grown. This has given rise to increasing concern about the economic and social consequences of low-wage employment, as a corollary of the UK's broader weak productivity performance.
- 6.8 This has been highlighted in the recent work on 'inclusive growth in D2N2 by the Royal Society for the Arts (RSA) and Nottingham Trent University. This highlights the growth of jobs in low wage (or low hours) occupations: the RSA's Inclusive Growth Commission estimates that across the D2N2 area, about 30% of workers earn less than the Living Wage (compared with 25% nationally). Across D2N2, the proportion earning less than the Living Wage varies from between 18-20% in Broxtowe and Rushcliffe, to over 35% in Nottingham, Bolsover and Mansfield⁵⁴.
- 6.9 In part, the high number of low wage occupations is a function of policy choice aimed at driving down worklessness, and it has been successful in that regard. Opportunities for individuals to develop higher skills linked with greater technological input and higher productivity could however contribute to rising wage levels, provided those opportunities are targeted towards those at the lower end of the income distribution.

"The inclusive growth challenge has built up over many years... Today, the majority of households living in poverty are in work... [and] deprivation... is estimated to account for 38% of the productivity shortfall of the UK's Core Cities"

RSA/Nottingham Trent University

⁵³ ONS. Model-based estimates of unemployment

⁵⁴ RSA/ Nottingham Trent University (2017), *Refreshing the D2N2 Strategic Economic Plan: The case for inclusive growth*, p.12. Data based on ONS, ASHE 2014, analysed by the RSA Inclusive Growth Commission

... and average earnings overall

- 6.10 Looking more broadly at earnings overall, gross weekly full-time median workplace earnings in D2N2 were £510, about 8% below the national average. Derby stands out as the only local authority area in D2N2 with above average median workplace earnings⁵⁵.

Occupational profile

- 6.11 D2N2's occupational profile broadly parallels the national picture. D2N2's *State of the Economy* report makes three key observations⁵⁶:
- Representation among 'higher skilled' occupations is somewhat lower than in England as a whole
 - Despite lower representation, employment in professional and associate professional and technical occupations has risen faster than average over the past five years
 - The relative strength of the manufacturing sector appears to impact on relatively high numbers in skilled trades and process occupations. Maintaining and adapting skills to respond to changes in technology is likely to be important for these groups.

Employment vulnerability

- 6.12 Returning to the Industrial Strategy 'grand challenges' and the technology drivers highlighted at the start of this report, recent research has identified customer service and retail, finance and admin and elementary storage occupations as those most at risk of automation⁵⁷. Aggregate employment generally rises even as existing occupations are made obsolete, as new jobs are created and there are gains from productivity. However, **places with a higher concentration of lower skilled, 'vulnerable' occupations are most likely to be at risk from automation**. Recent research for the Centre for Cities highlights Mansfield in particular as vulnerable to change⁵⁸.

Skills and qualifications

Workforce qualifications

- 6.13 Overall, D2N2's working age qualification levels under-perform the rest of the country, especially at higher levels, although they are broadly in line with the East Midlands.
- 6.14 As expected, there is variation in qualification levels. Broadly, rural and suburban locations (e.g. Rushcliffe and High Peak) have higher proportions qualified to NVQ 4; those with economies historically based on heavy industry (e.g. Ashfield, Mansfield and Bolsover) have lower proportions:

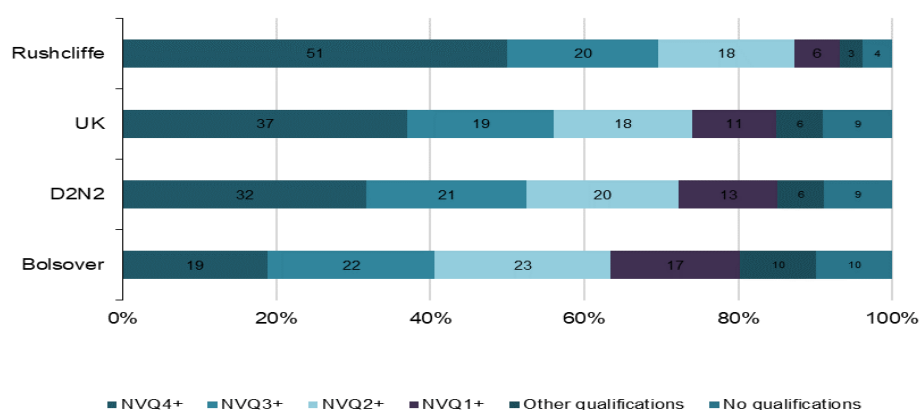
⁵⁵ The resident earnings pattern is somewhat different, with relatively high earnings in relatively affluent districts with high levels of out-commuting (such as Broxtowe and Rushcliffe)

⁵⁶ ONS, ASHE (2017); D2N2 (2017), *State of the Economy Report*, p.11

⁵⁷ Hasan Bakhshi *et al* (2017), *The Future of Skills: Employment in 2030*, NESTA/ Pearson

⁵⁸ Centre for Cities (2018), *Cities Outlook*, p.15

Figure 6-1: Qualifications (age 16-64), 2014-16: D2N2, UK and the best/worst performing districts



Source: ONS, Annual Population Survey. Three year average, 2014-16

Educational attainment

- 6.15 Recent analysis by the Department for Education considered those places where there is most to do to achieve the aspirations of the *Educational Excellence Everywhere* White Paper, which seeks to counter underperformance within the school system. Based on a series of indicators measuring educational outcomes and capacity to improve, the analysis shows varied performance across D2N2, with particular weaknesses in Derby, Nottingham and east Derbyshire⁵⁹.
- 6.16 This has prompted the designation of Derby as an **Educational Opportunity Area**, focused around efforts to (consistent with the analysis of local strengths set out in this report) use the city's education system to contribute to a vision for the city as "a centre of excellence for education and employment in science, technology, engineering, arts and mathematics"⁶⁰.
- 6.17 Derby's designation is somewhat paradoxical, given its generally strong economic performance: resolving school-based issues over the short to medium term is likely to be important to the continuation of current economic success.

Graduate retention

- 6.18 D2N2 contains an excellent higher education base: as set out in the earlier analysis of the area's science and innovation strengths, the universities are an important asset.
- 6.19 However, **graduate retention is relatively low**. Research for the Centre for Cities highlighted that while Nottingham experiences a particularly large inflow of students, of those who came to Nottingham from elsewhere, only 14% stayed in Nottingham to work after graduating – and Nottingham makes a particularly large contribution to London's graduate population⁶¹.

⁵⁹ Department for Education (2016), *Defining Achieving Excellence Areas: Methodology guidance note*. This also broadly reflects the findings of the Social Mobility Commission

⁶⁰ Department for Education (2017), *Derby: Opportunity Area 2017-20 – Local Delivery Plan*

⁶¹ Paul Swinney and Maire Williams (2016), *The Great British Brain Drain: Where graduates move and why*, Centre for Cities

- 6.20 However, the picture is also more complicated: analysis for Derby demonstrates that while the city loses University of Derby graduates, it attracts new graduates from elsewhere, particularly in the manufacturing sector⁶².

Supply and demand mismatches

- 6.21 Formal qualifications and skills are not necessarily the same thing, and employers may have skills gaps even as qualification levels rise. Recent research into skills ‘mismatches’ found that **half of all vacancies in D2N2 were accounted for by core technical and semi-technical occupations**, slightly higher than across the UK as a whole. Analysis of the UKCES Employer Skills Survey suggests that 31% of all vacancies in (more highly skilled) core technical occupations could be classed as ‘skill shortage’ vacancies, although relatively high wages in technical occupations suggest some opportunity for employment and income growth⁶³.
- 6.22 The skills mismatch analysis also found a general imbalance between further education provision and technical demand, with the ‘potential undersupply’ particularly high in respect of IT engineers and technicians.
- 6.23 These findings are not surprising, and reflect successive national reports investigating the under-supply of technical skills and the impact that this has on economic growth. However, given D2N2’s relative sectoral and technology strengths, the under-supply is potentially a key local risk.

Recent reform

- 6.24 The **Sainsbury Review** in 2016 investigated the apparent shortfalls in the provision of technical skills, concluding that the current system is too complex, includes too many qualifications and does not provide young people with the skills needed for work⁶⁴: views that strongly reflect those expressed by skills consultees as part of the early stage of the development of the SEP.
- 6.25 In response, the Government has recently launched **T-Levels**, intended to offer technical qualifications at Level 3, with equivalence to A Levels. Rollout is intended to be gradual, with three initial pathways (including software applications and digital design) available from 2020, and the full suite available from 2022. It is intended in the long term to develop T-Levels further, to provide qualifications at Levels 4 and 5. This is intended to be a major reform of the system, rather than an incremental change.
- 6.26 Meanwhile, the Government will shortly launch a call for proposals for **Institutes of Technology (IoT)**, backed by a £170 million fund. These are intended to work with employers to teach technical disciplines where industry demand is growing, particularly at Levels 4 and 5 and extending to degree-level provision⁶⁵. In the context of D2N2’s strong science and engineering base, an IoT is likely to be an appropriate response to current and likely future skills demand, and work is underway to develop a proposal.

⁶² Gabriele Piazza (2017), *The Great British Brain Drain: an analysis of migration to and from Derby*, Centre for Cities

⁶³ D2N2/ Centre for Progressive Capitalism (2017), *A report on skills mismatches in Derby, Derbyshire, Nottingham and Nottinghamshire LEP*

⁶⁴ *Times Educational Supplement* (October 2017), ‘First T-Level subjects announced’

⁶⁵ Department for Education (2017), *Institutes of Technology: Policy Statement*

6.27 Finally, recognising that developing the skills supply is an issue for the *existing* workforce as well as new entrants to the labour market, the Industrial Strategy announced the establishment of a **National Retraining Scheme** to help adults up-skill and re-skill: initially, this will be launched as a series of pilot initiatives and will focus on digital and construction skills⁶⁶.

LEPs and the skills agenda: The direction of travel?

6.28 In addition to some of the reforms described above, the Industrial Strategy set out some areas in which LEPs will have an additional role in the skills system.

6.29 In particular, the Strategy announced the introduction of new **Skills Advisory Panels**, ‘integrated’ with LEPs and intended to bring skills providers and businesses together to determine local growth priorities and set out an analysis of future supply and demand. Within the Strategy, the Panels are to have “real, meaningful influence” over the provision of post-16 education and training. It is not yet clear what this means in terms of funding and provision planning, but potentially, there is scope for a more substantive skills role at D2N2 level.

Implications for the Strategic Economic Plan

6.30 The skills system is complex, and while the ‘problems’ have been widely articulated (in D2N2 and elsewhere) for many years, driving change has often been frustrating. However, **the prospect of greater leverage for LEPs (and by extension, groups of employers and providers) within the skills system is welcome**. This should be borne in mind within the SEP: potentially, the SEP should set the overall strategy within which future provision planning can take place.

6.31 More broadly, the analysis above suggests the following implications for the SEP:

- The previous SEP placed a strong emphasis on aggregate job creation. However, employment rates are now at historically high levels and there is (post Brexit) the prospect of reduced access to labour at the lower end of the wage scale. There are still risks to overall employment levels (arising, for example, from a downturn in consumption), but overall, **the ‘need’ in D2N2 is for more highly paid, more productive jobs**, rather than additional employment *per se*.
- Raising workforce skills levels will be an important contribution to this. In line with the analysis in earlier chapters, this suggests **raising technical skill levels**, including through efforts to retrain the existing workforce, and improving the pathways for people to progress in work to more highly skilled, better paid, jobs. Driving up wage levels across the economy is also likely to require investment in wider business management skills.

6.32 Looking to the future, educational attainment is patchy, even in those parts of the LEP area with generally positive economic indicators. Addressing underperformance – which may require additional Government investment – will be important to secure the supply of skills, and positive social outcomes, in the long run.

⁶⁶ HM Government (2017), *Industrial Strategy*, p.117

7. Assessment of strengths, weaknesses, opportunities and threats

Summary

- Overall, this review finds that there are substantial opportunities for D2N2. These are particularly associated with its world-class manufacturing base, wider sector strengths in areas such as life sciences and its universities
- Future infrastructure investment associated with High Speed 2 is also important, both for the improved connectivity that it will bring and the opportunity it will provide for Derby and Nottingham to make the most of their complementary assets
- However, the area has significant challenges to overcome, particularly associated with low productivity and a relatively weak skills profile.

Introduction

- 7.1 This report provides a summary of evidence, and poses some strategic questions, to help D2N2 partners develop the new SEP. Based on the analysis set out earlier, this chapter summarises the headline strengths, weaknesses, opportunities and threats facing the area and outlines next steps in taking the SEP forward.

Strengths, weaknesses, opportunities and threats

Strengths

- 7.2 D2N2 is a large and diverse regional economy, with strengths in areas of technology and science that are recognised as national priorities. Key strengths include:
- **D2N2's economy has shown healthy growth in recent years.** Between 2010 and 2015, GVA per capita increased ahead of the UK and East Midlands averages
 - Linked with this, **economic activity and employment are both high**, and have improved significantly in recent years, and the overall **business stock is growing**
 - There are substantial **sector strengths in manufacturing**. The manufacturing sector accounts for about 13% of all employment, and is underpinned by a concentration of major employers (such as Bombardier, Toyota and Rolls-Royce at Derby). Beyond the manufacturing sector, there are also strengths associated with life sciences (especially at Nottingham), food manufacturing and energy systems and supply
 - D2N2's **higher education base is strong**. The universities constitute a major economic sector in their own right and (especially in Nottingham) are a substantial driver. In addition, the university research base has particularly relevant strengths in digital technologies and data and in engineering
 - **Nottingham and Derby are significant as regional centres and drivers of economic growth**, with both (especially Nottingham) drawing workers and

consumers from a wider hinterland. The two centres also have **complementary, rather than competing, assets**

- **Strategic north-south connectivity is generally good**, there is easy access to airports and the area benefits from its proximity to other major centres
- D2N2 benefits from a **superb natural environment**, including the Peak District National Park, Sherwood Forest and the National Forest. While this has intrinsic value, it is also economically valuable as a tourism asset and a contributor to local quality of life
- The area maintains **relative cost advantages**. In parts of D2N2, these are significant – although as the economy grows, these are likely to be eroded over time
- There is **evidence of practical collaboration and delivery locally**, via previous programmes channelled through the LEP and through cooperation in support of growth

Weaknesses

7.3 Despite these strengths, D2N2 faces productivity and labour market challenges which act as a constraint on growth:

- **Productivity is relatively low**. It is no lower than neighbouring LEP areas or the rest of the East Midlands – it is more or less the same – but there is a clear gap between D2N2 and the UK-wide picture. This is in the context of generally weak national productivity overall. Nottingham’s particularly low productivity suggests a cause for concern, given the city’s important regional role, and is partly explained by a high concentration of service and consumption activities
- **Earnings are relatively low** (with Derby the exception). In some parts of D2N2 – particularly Nottingham and some of the northern districts, the incidence of low-wage employment is substantially higher than the UK average
- **Business density is relatively low** compared with the UK as a whole and with neighbouring LEP areas. While the business stock has grown in recent years, the rate of growth has been modest
- The **workforce skills profile is relatively weak**. Fewer people are have high qualifications, and employers report persistent skills gaps, particularly in ‘core technical’ and ‘semi-technical’ activities
- There are **specific challenges within the education system** which in places coexist with generally well performing economies
- There is a **limited presence in higher-value sectors outside manufacturing**. In particular, lower value activities tend to be relatively more represented in the service sector and the presence of (for instance) financial services is low
- **Inequalities are quite high**, both locally and across D2N2

- Despite generally good north-south connections, **transport links to other parts of the Midlands and the North are poorer than they should be**, given D2N2's central location and the density of population. Some internal road and rail connections are also constrained, including between major centres (e.g. rail access from north and central Nottinghamshire)

Opportunities

7.4 Looking to the future, there are some very significant opportunities on which D2N2 can build:

- **High Speed 2** is a project of national significance, offering scope to significantly improve connectivity to the Midlands and the North as well as London; medium-term employment linked with development; and long term growth potential, especially associated with the East Midlands Hub
- Through **Midlands Connect**, there is a strategy for, and the opportunity to deliver, further rail and road improvements. This will yield specific infrastructure benefits for D2N2, but it will also enable D2N2 to gain from greater transport efficiency across the region
- Linked with this, the wider **Midlands Engine strategy** provides an opportunity to address D2N2's productivity challenges on a wider scale, recognising that similar issues are shared across the region
- Within D2N2, there is an opportunity to **strengthen the links between, and complementarity of, Derby and Nottingham**, especially in the context of HS2. Unusually within a LEP area, there are two major economic centres with complementary strengths, and there is the potential to 'link' Nottingham's financial, digital and life science capabilities with Derby's engineering strengths
- Looking beyond D2N2, there are also opportunities to benefit from the **growth of neighbouring centres** with a strong economic 'footprint' in the area, such as Sheffield and Manchester
- In the shorter term, the Government's **Industrial Strategy** is directly relevant to D2N2: it prioritises sectors and technologies in which D2N2 has strengths, strongly focuses on bridging the productivity gap, and holds out the prospect of a stronger role for LEPs. There is an opportunity to present Government with ideas and solutions at an early stage

Threats

7.5 However, there are some significant challenges and risks:

- While employment and economic activity are high at the moment, **the macroeconomic outlook is uncertain**, it is likely that growth will be low over the next couple of years, and the impact of Brexit is unknown. There are wider risks to the D2N2 economy that are outside local control

- In this context, there is a **risk to future investment in transport and skills** in the event of further deterioration of the public finances
- While it is highly productive and a major regional strength, **parts of the area are quite highly dependent on the manufacturing sector**, and a limited number of larger firms have an important role. Any decisions to disinvest could therefore have significant impacts
- The **skills shortfall** presents a risk to future business investment. Unless it is resolved, over time the area's productivity performance could deteriorate
- Driving forward the SEP, and the wider Midlands Engine/ Midland Connect concept requires sustained resources over time. There is a risk that **other regions may be better resourced** and better able to compete for investment

Implications for the Strategic Economic Plan

- 7.6 The summary above provides a high-level 'initial take' on the evidence so far, taking into account both the local and regional economic opportunities and emerging national strategy, and providing a basis for the development of the new SEP. The strengths, weaknesses, opportunities and threats outlined above suggest some important themes that the new SEP may need to take into account:

Resilience, scale and innovation

- 7.7 It is striking that while D2N2 undoubtedly contains a world-class science and innovation offer (both in industry and academia), overall productivity and business density are low – very low in parts of the area. While D2N2 has significant opportunities to take advantage of the technology trends identified in Chapter 2, reliance on a relatively small number of major, highly productive firms (particularly in manufacturing) is high. Retaining these corporate assets, for example by ensuring that they have access to talent and by growing local and regional supply chains, is likely to be a priority. However, it will also be important to develop the resilience of the local economy by expanding the business base, both through indigenous growth and entrepreneurship, and through new inward investment.
- 7.8 Linked with this, the recent Science and Innovation Audit highlighted strengths in several areas (for example in next generation transport, life sciences and healthcare, future food processing and energy and low carbon growth). However, D2N2's assets are not as 'joined up' as they could be, perhaps reflecting the diversity and 'polycentricity' of the area. Developing a stronger 'innovation ecosystem' will be important, building on complementary strengths within D2N2 (such as Derby's concentration of engineering expertise and Nottingham's digital technology capabilities), and improving access to finance and R&D capacity.

Connectivity

- 7.9 The next twenty years will see major investment in transport connectivity with the development of High Speed 2, the wider Midlands Connect strategy, and the opportunities that this will present for faster connections to Birmingham, London and the North and for new development at Toton and elsewhere.

- 7.10 However, new infrastructure does not in itself lead to economic growth. Making a success of HS2 will depend on local connections across D2N2 (currently, while strategic north-south links are generally good, local and east-west links are relatively weak, given D2N2's central location), and on the extent to which transport improvements are integrated within a wider investment strategy. Excellent digital connectivity will of course also be central to the D2N2's ability to drive value from the long-term technology trends impacting on the economy.

Skills and talent

- 7.11 While D2N2 has a strong higher education offer, working age qualifications are relatively weak, graduate retention is relatively low, and there are specific challenges within the local education system, often within areas that have generally well-performing economies. While some of D2N2's skills challenges are shared with LEPs across the country (the complexity of the system and the challenges of ensuring that provision responds to both current and future employer demand are faced by LEPs everywhere), D2N2's relative skills shortfalls present a risk to future economic resilience and to individuals' ability to progress within the labour market.
- 7.12 In particular, looking ahead to the next 15-20 years, slower growth in the working age population, combined with significant technology-driven changes in the nature of work (and labour demand in some occupations) are likely to require increased adaptability and reskilling by people who are already in the labour market. Making this happen (across occupations and sectors) will be important both to social mobility and long term productivity.

Annex A: Sectoral profile and future growth

Introduction

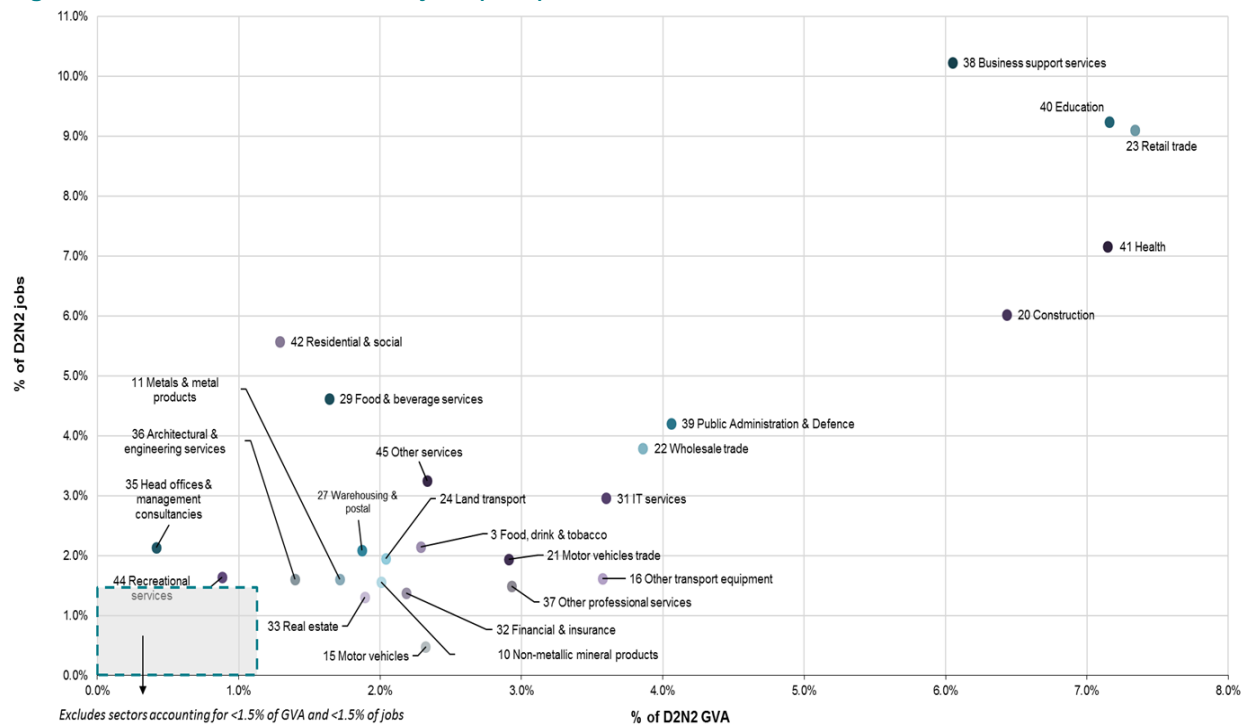
A.1 This annex provides further details of D2N2’s sectoral composition and projected GVA and employment growth to 2030. It summarises more detailed analysis contained within the *D2N2 Sectoral Analysis Report* (December 2017), and considers:

- the *scale* of different sectors’ contribution to the D2N2 economy (i.e. which are the largest sectors in terms of employment and GVA)
- the extent to which different sectors are *specialised* in D2N2 (i.e. how far they are ‘over-represented’ or ‘under-represented’ compared with the rest of the country in terms of jobs and GVA share)
- the *productivity* of different sectors in D2N2
- projected growth in employment and GVA between 2015 and 2030, drawing on Cambridge Econometrics’ Local Economy Forecasting Model (LEFM).

Sector scale

A.2 In common with the UK as a whole, the largest sectors in D2N2, in terms of both employment and GVA are in public service sectors (such as education and health), business support services, retail and construction:

Figure A-1: Share of D2N2 GVA and jobs (2015)



Source: SQW analysis of CE data

Specialisation

- A.3 While Figure A-1 illustrates the absolute employment and GVA share for each main sector, we can understand more about D2N2's *relative* sectoral composition by looking at specialisation.
- A.4 Considering GVA and employment shares compared with the UK average, the *Sectoral Analysis Report* identifies specialisation in a number of sectors. '**Other transport equipment**' (which includes aerospace and other non-motor vehicle transport) is particularly specialised in jobs and GVA; other sectors with high levels of specialisation include **motor vehicles, textiles** and '**non-metallic mineral products**' (which includes glass, ceramics, etc.). **Pharmaceuticals** is highly represented in employment terms, although not in GVA.
- A.5 There are also some important sectors in which D2N2 is particularly *under-represented*. These include **financial and insurance services** and **media**.

Productivity

- A.6 The third way of looking at sector strengths is to consider how *productive* they are, both in absolute terms, and relative to the sector in other parts of the UK.
- A.7 Across all sectors, D2N2's economy is less productive than that of the UK as a whole: average GVA per job in D2N2 was £41,000 in 2015, compared with £46,000 nationally). But within that context, a number of sectors in D2N2 were both more productive than the UK economy average *and* more productive than the same sector elsewhere in the country. These include **motor vehicles, electrical equipment, 'other professional services', machinery** and **non-metallic mineral products**. Some others (including **pharmaceuticals** and '**other transport equipment**') were more highly productive overall, although less productive than the sector in other parts of the country.

Bringing together specialisation and productivity

- A.8 Based on the analysis above, we can identify three broad groups:
- **Sectors that are clearly specialised in D2N2 and highly productive:** There are ten sectors where the D2N2 area is specialised in GVA terms and has high productivity compared to the UK economy average. These include **transport manufacturing** (motor vehicles and other transport equipment), **equipment manufacturing** (electrical, machinery), and **other manufacturing** (printing and recording, chemicals, non-metallic minerals), as well as water, sewerage and waste, motor vehicles trade, and other professional services. Seven of these sectors are also specialised in employment terms.
 - **Some relative 'poor performers':** There are 13 sectors in D2N2 where productivity is lower in an absolute sense (i.e. lower than the whole economy benchmark) and lower than sector benchmarks. These include sectors that are also under-represented (such as **media** and **financial services**), and some with average representation (such as **wholesale**)
 - **A large group of sectors that show a mixed picture.** These include:

- sectors which have lower productivity than the economy overall, but which are more productive in D2N2 than they are in other parts of the country, and which are quite highly specialised (such as **retail, food, drink and tobacco** and **logistics** (land transport and warehousing))
- **pharmaceuticals**, which has average representation, and which is highly productive, but is less productive in D2N2 than elsewhere
- a number of sectors which are under-represented in D2N2. These include some which are more productive than they are elsewhere in the UK (e.g. **construction** and **accommodation**), and some which are somewhat less productive than the rest of the country, although are still more productive than the D2N2 economy as a whole (e.g. **electronics**)

Growth: past trends and future projections

- A.9 Since 2000, most of the sectors in which D2N2 has as high level of specialisation and which are highly productive have seen positive GVA growth. However, this has, in many cases (such as **printing and recording, motor vehicles** and **non-metallic mineral products**), been accompanied by falls in employment. The largest absolute growth in jobs and GVA has tended to be in sectors in which D2N2 is less specialised.
- A.10 Looking to the future, Cambridge Econometrics projections anticipate continued GVA growth to 2030 in all those sectors in which D2N2 is specialised and which show high productivity (with employment growth in **motor vehicles** and **other transport equipment** and some losses in **non-metallic mineral products**). More broadly, CE projects strong GVA growth in **motor vehicles, food and drink, retail, IT services** and **construction**:

Table A-1: GVA and employment growth in D2N2, 2015-30 (selected sectors)

Sector	GVA		Jobs	
	2015 share of GVA (%)	Projected growth, 2015-30 (%)	2015 share of all jobs (%)	Projected growth, 2015-30 (%)
Non-metallic mineral products	2.0	26.6	1.6	10.9
Motor vehicles	2.3	56.0	0.5	12.4
Other transport equipment	3.6	12.6	1.6	8.8
Motor vehicles trade	2.9	17.5	1.9	4.5
Other prof services	2.9	12.3	1.5	20.2
Food & drink	2.3	68.4	2.2	13.2
Retail	7.3	43.4	9.1	10.9
Land transport	2.0	28.8	2.0	-11.5
Warehousing & postal	1.9	27.6	2.1	1.6
Education	7.2	13.9	9.2	-7.0
Health	7.1	37.1	7.2	-6.7

Sector	GVA		Jobs	
IT services	3.6	45.1	3.0	4.4
Financial & insurance	2.2	27.4	1.4	-7.6
Construction	6.4	44.6	6.0	14.5
Business support services	6.0	26.8	10.2	20.7
Wholesale	3.9	24.7	3.8	6.4
Other services	2.3	21.4	3.2	0.1
Food & beverage services	1.6	31.2	4.6	13.7
Head offices & management consultancies	0.4	9.6	2.1	8.2
Public admin & defence	4.1	46.6	4.2	18.1
Residential & social care	1.3	117.1	5.6	25.9

Source: SQW analysis of CE projections. Sectors included are those accounting for either 2% or more of D2N2 GVA in 2015, or 2% or more of total jobs