Informing the D2N2 SEP refresh

Draft final Sectoral Analysis Report

September 2017

SQW

Contents

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1. Introduction

1.1 In summer 2017, SQW was commissioned to undertake a Science and Innovation Audit (SIA) and support the Strategic Economic Plan (SEP) refresh for the Derby, Derbyshire, Nottingham and Nottinghamshire (D2N2) LEP area. As part of this assignment, SQW was asked to produce a sectoral analysis paper to inform the refresh of the D2N2 SEP. This paper was completed in a two week period in July 2017 and finalised in early September 2017, following helpful comments from the D2N2 LEP.

1.2 The analysis in this paper makes use of Cambridge Econometrics' (CE) projections data. These data are generated by CE's Local Economy Forecasting Model (LEFM). The LEFM projects economic indicators for a local area by explaining the output of local industries and their links with the rest of the world. The LEFM differs from other models, which typically link output or employment directly to national/regional output or employment.

1.3 Under the LEFM, data are grouped into 45 sectors. Their relationship to SIC codes is shown in Annex B of this report. In previous work, the D2N2 LEP have agreed a set of SIC codes to define their priority sectors. These are presented in Annex C. There is a high level of read across and commonality between the two definitions for the majority of the D2N2 priority sectors. However, there are larger differences for Creative industries, Life sciences, and Visitor economy, because the D2N2 definitions are more fine-grained than the LEFM data allow. To ensure that this is reflected fully in the SQW analysis, Table 3-3 includes LEFM data for the broader sectoral definition, and BRES data using the narrower D2N2 definition.

1.4 The analysis makes use of Location Quotients (LQs). These illustrate how concentrated/specialised a given variable (GVA or jobs by sector for example) is in the D2N2 area compared to the UK economy as a whole. For example, an LQ figure over 1 means that jobs in that sector are more concentrated in the D2N2 geography than the whole of the UK. An LQ figure of 1 illustrates that jobs in that sector are equally concentrated, whilst an LQ figure below 1 illustrates that there are fewer jobs in that sector than would be expected.

1.5 Key messages from the data analysis focussing on specialisation, productivity, scale and growth trajectory are presented in Section 2 of this report, whilst Section 3 includes initial thoughts on the potential implications of this for the emerging refreshed D2N2 SEP. Annex A sets out a more detailed data analysis, and SIC code definitions are provided in Annex B and C.

2. Sectoral analysis

Specialisation

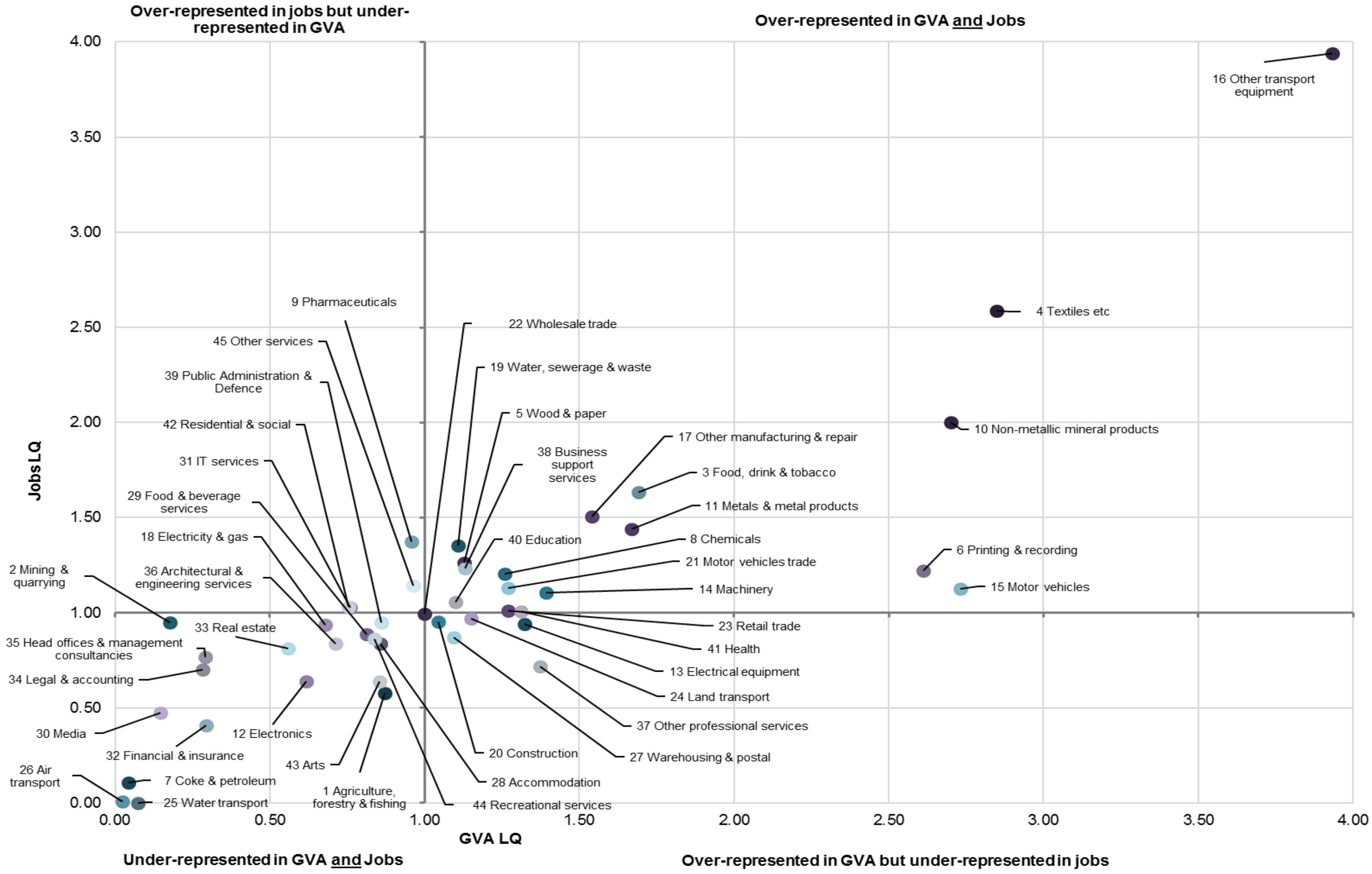
2.1 The data suggest that a number of sectors are **particularly specialised in the D2N2 area, both in terms of GVA and jobs.** By specialised, we mean that the share of GVA and jobs in these sectors in D2N2 is greater than the equivalent share across the UK as a whole. This includes a broad range of sectors as illustrated in Figure 2-1. Other transport equipment[1] particularly stands out, with its LQs for both GVA and jobs at almost 4. Textiles is the next most specialised sector, with both LQs higher than 2.5. The Non-metallic mineral products[2], Printing and recording, and Motor vehicles sectors are also highly specialised, but with the latter two more specialised in GVA than employment terms.

2.2 Some sectors are **over-represented in terms of GVA but not jobs**. This is particularly notable for Other professional services[3], with the other sectors in this group all closer to an average share of jobs. Other sectors are **over-represented in jobs but not GVA**, for example Pharmaceuticals. The share of D2N2's GVA and jobs broadly match the UK average in sectors such as Wholesale trade and Construction (i.e. the LQs for both GVA and jobs are around 1 for these sectors).

2.3 Several sectors are **under-represented in both GVA and jobs**, with five having less than half the concentration normally seen across the UK. These are: Media; Financial and insurance; Coke and petroleum; Air transport; and Water transport.

[1] Manufacture of transport equipment other than motor vehicles
[2] Manufacture of rubber and plastic products, and other non-metallic mineral products including glass and ceramics
[3] Includes: scientific research and development; advertising and market research; other professional, scientific and technical activities; and veterinary activities

Figure 2-1: LQs for jobs and GVA, D2N2 compared to the UK (2015)



Source: SQW analysis of CE data

Productivity

2.4 Productivity by sector is shown in Figure 2-2. The dark green bars rank the productivity of the sectors in D2N2 from highest to lowest, whilst the red dashed lines indicate which sectors are more productive than the UK and D2N2 whole economy benchmarks. An additional perspective on productivity is given by the lighter green bars. These illustrate the UK sectoral productivity benchmarks. Those D2N2 sectors which outperform, or are close to, their respective sectoral average at a UK level are identified with an asterisk.[4]

2.5 A number of sectors **are highly productive (in an absolute sense compared to the UK whole economy average) <u>and</u> perform well against national sectoral benchmarks** for productivity. In order of absolute productivity, these nine sectors are:

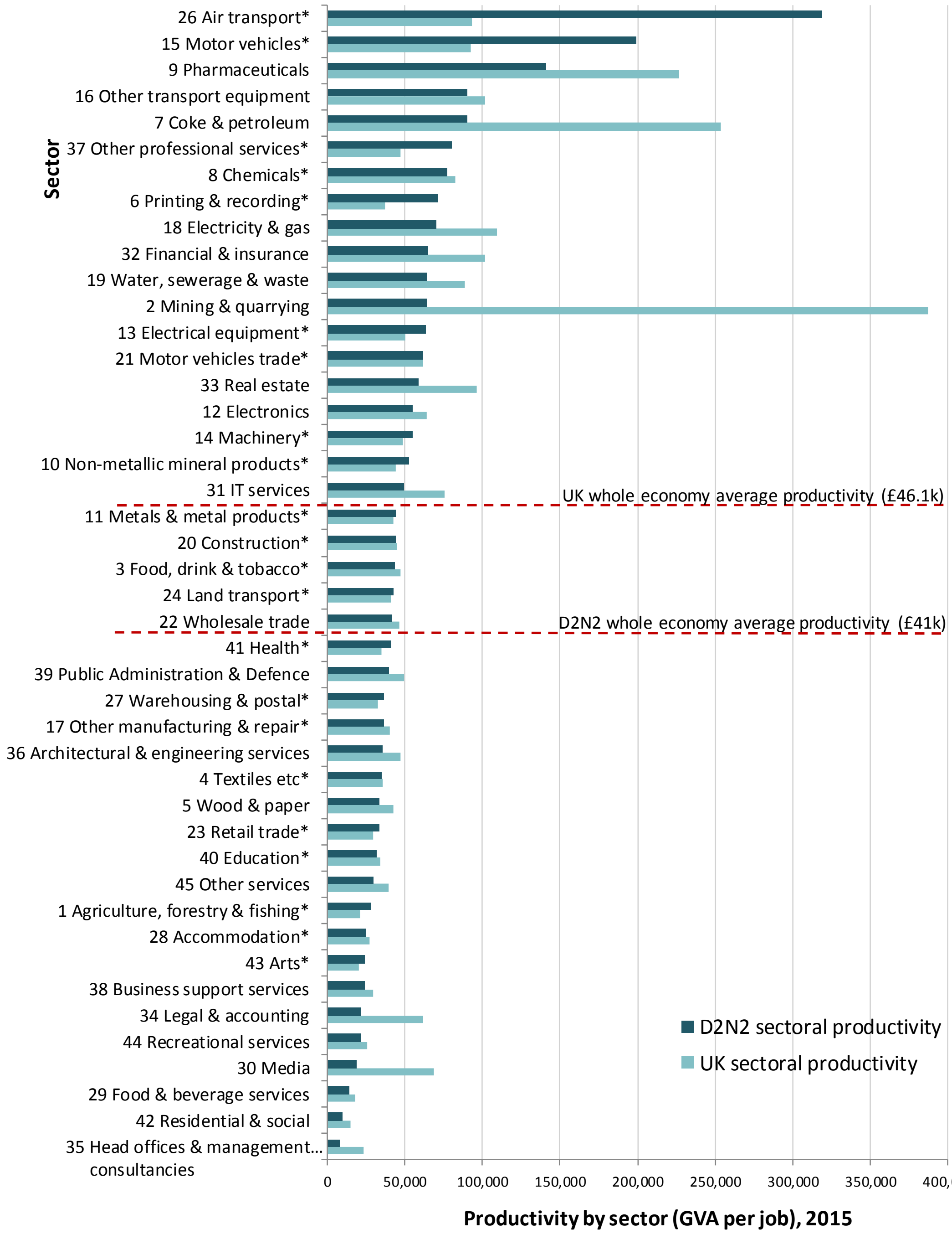
- Air transport[5]
- Motor vehicles
- Other professional services
- Chemicals
- Printing and recording
- Electrical equipment
- Motor vehicles trade
- Machinery
- Non-metallic mineral products.

2.6 Some sectors in the D2N2 area have **lower levels of productivity (in an absolute sense), but outperform, or are close to, their national peers in terms of productivity**. These include manufacturing sub-sectors (Metals and metal products, Textiles, Food, drink and tobacco, Other manufacturing and repair) and logistics (Warehousing and postal, Land transport) in addition to a broader mix of areas covering Agriculture, forestry and fishing, Arts, Health, Retail trade, Construction, Education, and Accommodation.

2.7 A further group of sectors, led by Pharmaceuticals, have a **high absolute productivity, but perform less strongly than sector benchmarks**. Other transport equipment, and Coke and petroleum are also in this category.

[4] Close to sector average is defined as being within 90%-100% of the UK sectoral benchmark
[5] However, it should be noted that the CE data show that in 2015 D2N2's Air transport sector employed only 15 people despite generating a GVA figure of £5m.

Figure 2-2: Productivity by sector (2015)



Source: SQW analysis of CE data

Bringing together Specialisation and Productivity

2.8 Based on the analysis above, the 45 sectors have been grouped into three broad categories (and sub-groups within these) as shown in Figure 2-3 below:

- **Clearly specialised 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. This includes transport manufacturing (Motor vehicles and Other transport equipment), equipment manufacturing (Electrical, Machinery), other manufacturing (Printing and recording, Chemicals, Non-metallic mineral), as well as Water, sewerage and waste, Motor vehicles trade, and Other professional services. Seven of these sectors are also specialised in employment terms.

- **Mixed picture** – the central box shows a mixed basket of sectors which are:
  - Specialised and, while productivity is lower than the whole economy average, it outperforms sector benchmarks. Examples are split between manufacturing sub-sectors (Food, drink and tobacco, and Textiles) and services such as Education and Health.
  - Averagely represented (i.e. LQ=1 for GVA) and with high absolute productivity, but lower than the sectoral average. Pharmaceuticals is the only D2N2 example of this.
  - Under-represented in terms of GVA and with varying levels of productivity. This includes highly productive sectors, such as Air transport; sectors which outperform the UK economy as a whole, but not their sectoral benchmark, such as Electronics, and IT services; and sectors which outperform their sectoral benchmark, but not the UK economy as a whole, including Construction and Accommodation.
- **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 are split into three sub-categories according to the level of GVA specialisation: specialised (e.g. Wood and paper); average representation (e.g. Wholesale trade); and not specialised in GVA (e.g. Media, Legal and accounting).

Figure 2-3: Sectoral specialism and productivity across D2N2

Clearly specialised & highly productive

Group 1 – Specialised in GVA & high absolute productivity

- 6 Printing & recording
- 8 Chemicals
- 10 Non-metallic mineral products
- 13 Electrical equipment
- 14 Machinery
- 15 Motor vehicles
- 16 Other transport equipment
- 19 Water, sewerage & waste
- 21 Motor vehicles trade
- 37 Other professional services

Mixed picture

Group 2 – Specialised in GVA, low absolute productivity but above sector benchmarks

- 3 Food, drink & tobacco
- 4 Textiles etc
- 11 Metals & metal products
- 17 Other manufacturing & repair
- 23 Retail trade
- 24 Land transport
- 27 Warehousing & postal
- 40 Education
- 41 Health

Group 3 – Average representation, high absolute productivity but below sector benchmarks

- 9 Pharmaceuticals

Group 4 - Not specialised in GVA & with 4a) high absolute productivity & above sector benchmark

- 26 Air transport

4b) high absolute productivity but below sector benchmarks

- 2 Mining & quarrying
- 7 Coke & petroleum
- 12 Electronics
- 18 Electricity & gas
- 31 IT services
- 32 Financial & insurance
- 33 Real estate

4c) low absolute productivity but above/close to sector benchmarks

- 1 Agriculture, forestry & fishing
- 20 Construction
- 28 Accommodation
- 43 Arts

Poor performers

Group 5 - Specialised in GVA but low absolute productivity (also below sector benchmarks)

- 5 Wood & paper
- 38 Business support services

Group 6 – Average representation but low absolute productivity (also below sector benchmarks)

- 22 Wholesale trade
- 45 Other services

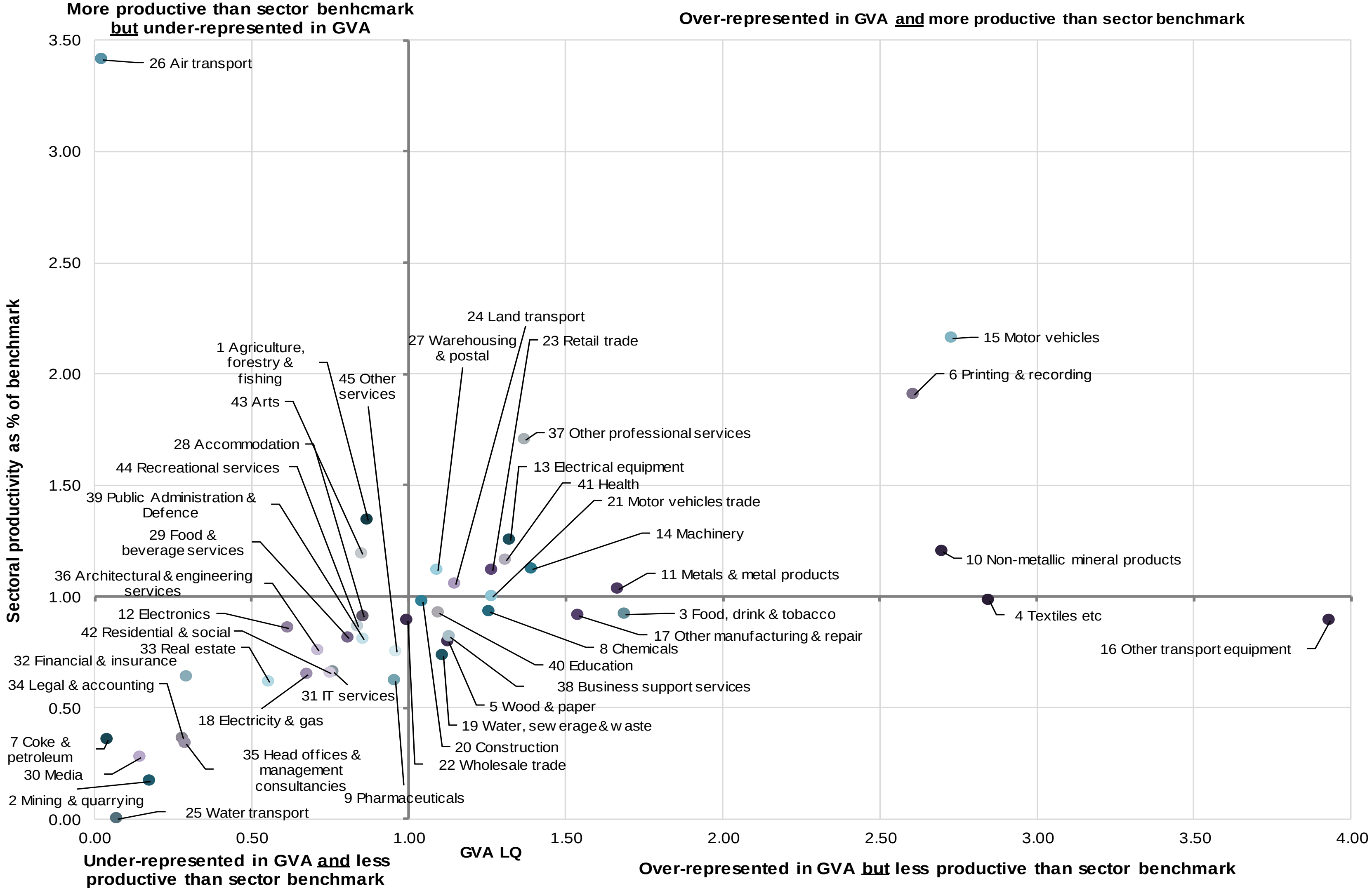
Group 7 – Not specialised in GVA, low absolute productivity (also below sector benchmarks)

- 25 Water transport
- 29 Food & beverage services
- 30 Media
- 34 Legal & accounting
- 35 Head offices & management consultancies
- 36 Architectural & engineering services
- 39 Public Administration & Defence
- 42 Residential & social
- 44 Recreational services

Source: SQW analysis

2.9 Whilst the graphic above uses absolute productivity and specialisation, it is also interesting to consider relative sectoral productivity and specialisation. Figure 2-4 below reveals that twelve sectors in D2N2 are over-represented in GVA terms and more productive than sector benchmarks. Seven of these are in group 1 as defined above. In order of GVA LQ, the twelve are: Motor vehicles; Non-metallic mineral products; Printing and recording; Metals and metal products; Machinery; Other professional services; Electrical equipment; Health; Retail trade; Motor vehicles trade; Land transport; and Warehousing and postal.

Figure 2-4: Sectoral productivity and GVA specialisation in D2N2 (2015)

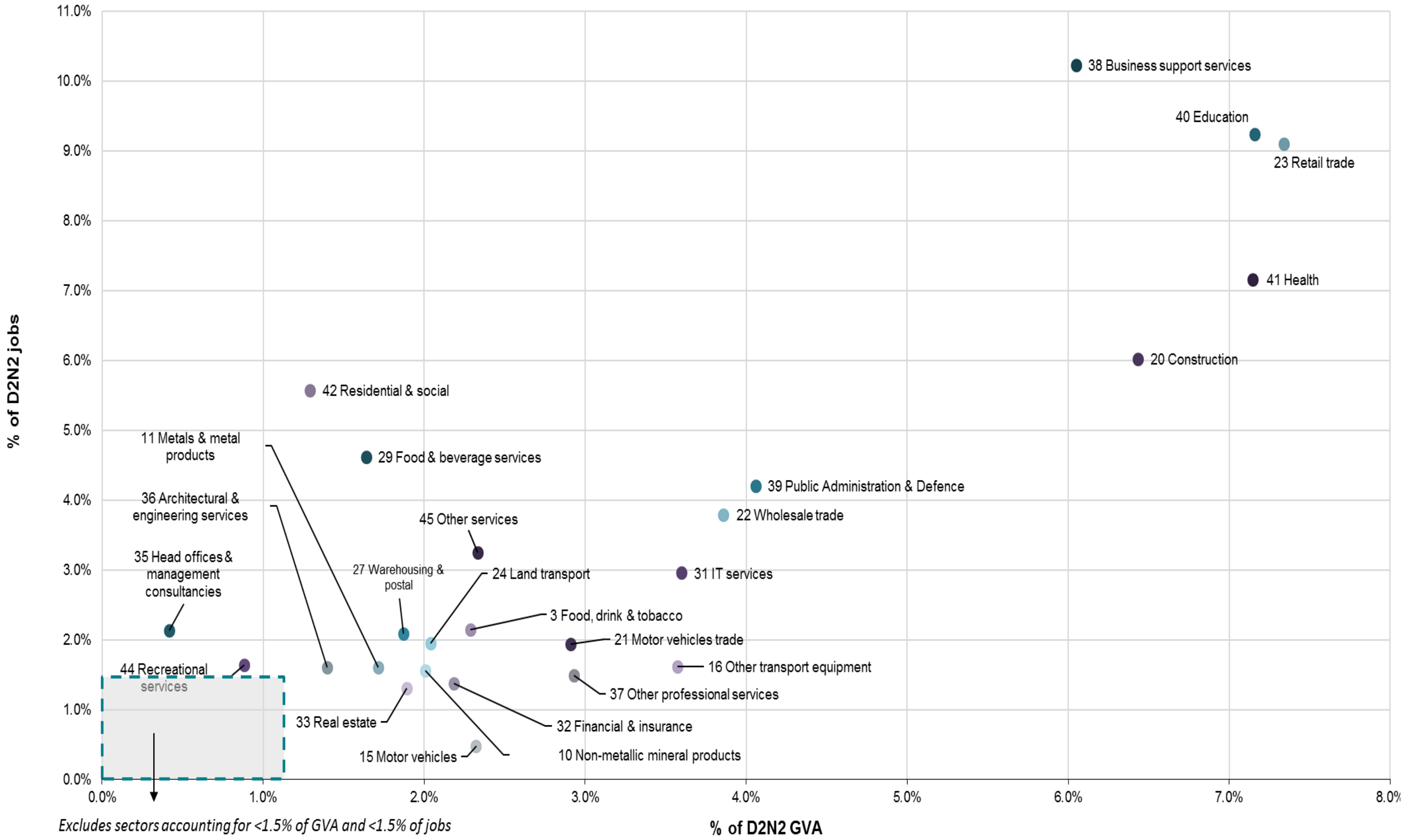


Source: SQW analysis

Scale

2.10 Figure 2-5 presents the share of GVA and jobs accounted for by the largest sectors across the D2N2 area (i.e. those representing 1.5% or more of jobs and/or GVA). It is evident that some of the mixed and lower productivity sectors referenced above – such as Education, Retail, Construction, Health, and Business Support Services – account for a relatively large share of the D2N2 jobs and GVA. In contrast, higher productivity sectors such as Electrical equipment and Pharmaceuticals account for a lower share of the economy, especially in terms of jobs.

Figure 2-5: Share of D2N2 GVA (2015)



Source: SQW analysis of CE data

2.11 Another perspective on scale is available by looking at the number of businesses per sector and the average size of these businesses, as shown in Table 2-1. Cells highlighted in green show that the D2N2 average employment level per firm is higher than UK average employment, whilst cells in orange show that the average employment figures are identical. This does not necessarily imply that larger firms are more productive or 'better' than smaller firms. However, the larger firms will, by definition, be important as D2N2 seeks to increase employment opportunities and they typically have more resources to invest in staff training and development, equipment and R&D activities.

2.12 By far the largest sector in terms of the number of businesses across the D2N2 economy is Construction, this is followed by Retail trade and Business support services. The businesses in these three sectors have an average job count which is very similar to the UK average, and higher in the case of Business support services.

2.13 Those D2N2 sectors with the largest number of jobs per business are Other transport equipment (221 jobs per businesses), Public Administration & Defence (156) and Pharmaceuticals (134). The figures for Other transport equipment and Pharmaceuticals are both substantially larger than the UK sectoral comparators, although the figure for Public Administration is lower. Amongst the other sectors, Financial and insurance has a notably low jobs per business figure (i.e. smaller firms in employment terms) compared to the UK average, 11 in D2N2 versus 23 for the UK average.

Table 2-1: D2N2 Business count analysis (2015)

	No. businesses in D2N2	Average jobs per D2N2 business	Average jobs per UK business
20 Construction	8,635	7	8
23 Retail trade	5,835	16	16
38 Business support services	5,220	20	14
29 Food & beverage services	4,035	12	14
1 Agriculture, forestry & fishing	3,710	2	3
35 Head offices & management consultancies	3,405	6	6
31 IT services	3,210	9	6
22 Wholesale trade	3,145	12	12
45 Other services	2,965	11	9
21 Motor vehicles trade	2,655	7	8
36 Architectural & engineering services	2,540	6	7
37 Other professional services	2,465	6	7
33 Real estate	2,425	6	6
24 Land transport	1,885	11	13
41 Health	1,620	45	43
42 Residential & social	1,550	37	36
34 Legal & accounting	1,545	10	10

	No. businesses in D2N2	Average jobs per D2N2 business	Average jobs per UK business
32 Financial & insurance	1,325	11	23
40 Education	1,175	80	73
11 Metals & metal products	1,110	15	14
17 Other manufacturing & repair	1,075	14	12
44 Recreational services	830	20	21
27 Warehousing & postal	805	26	31
30 Media	485	11	10
10 Non-metallic mineral products	445	36	28
43 Arts	440	15	11
6 Printing & recording	410	10	9
5 Wood & paper	405	13	14
14 Machinery	330	20	24
4 Textiles etc.	325	28	14
28 Accommodation	305	41	30
39 Public Administration & Defence	275	156	223
19 Water, sewerage & waste	250	33	28
3 Food, drink & tobacco	240	92	50
12 Electronics	200	14	24
13 Electrical equipment	125	20	28
15 Motor vehicles	110	44	50
8 Chemicals	100	38	40
16 Other transport equipment	75	221	64
18 Electricity & gas	60	62	36
2 Mining & quarrying	45	49	64
9 Pharmaceuticals	15	134	85
25 Water transport	15	0	9
26 Air transport	15	1	95
7 Coke & petroleum	5	6	72
Total	**67,835**	**15**	**14**

Source: SQW analysis of UK Business count data and CE jobs data

Past trends and future projections

2.14 Trends since 2000 are presented in Table 2-2 for each sector in D2N2, grouped according to their specialisation and productivity performance (as shown above). To illustrate sectors which have undergone particularly large changes, cells showing percentage falls of 20% or more are shaded red, whilst those showing increases of 20% or more are shaded green. The analysis shows that:

- For the Group 1 sectors that are specialised and productive, all but one of these have seen in increases in their GVA since 2000. However, over half of the sectors in this group have experienced a decline in jobs and/or business numbers since 2000. Three of these sectors are notable for increasing levels of GVA, but falling employment: Printing and recording; Non-metallic mineral products; and Motor vehicles.
- The picture is more positive for Group 2 where the D2N2 area is specialised but productivity is lower. Two thirds of these sectors have seen a greater than 20% increase in the number of businesses operating in the sector. The major exception to this is Textiles where GVA, jobs and business counts have all fallen.
- For the remaining 'mixed picture' sectors in Groups 3 and 4, there is no clear narrative. Some have seen declines in GVA, jobs and businesses, e.g. Electronics and Mining and quarrying, whilst others have seen growth in all three indicators, e.g. IT services, Real Estate and Accommodation.
- The largest growth in GVA, jobs and businesses has occurred in Groups 5, 6 and 7, where D2N2 has lower productivity in an absolute sense and relative to sector benchmarks. Especially strong growth has occurred in Head offices and management consultancies, and Architectural and engineering services.

Table 2-2: Past trends in D2N2 sectors (2000-2015)

	% of D2N2 GVA (2015)	% of D2N2 jobs (2015)	% GVA growth (2000/15)	% Jobs growth (2000/15)	% Business Count growth (2010/16)
Group 1 – Specialised in GVA & high absolute productivity					
6 Printing & recording	0.7	0.4	91.2	-21.7	-14.0
8 Chemicals	0.7	0.4	0.5	-54.8	-4.5
10 Non-metallic mineral products	2.0	1.6	25.5	-29.8	-4.2
13 Electrical equipment	0.4	0.2	-26.3	-48.2	13.6
14 Machinery	0.8	0.6	7.1	-32.6	-10.7
15 Motor vehicles	2.3	0.5	64.3	-54.4	-8.0
16 Other transport equipment	3.6	1.6	75.8	1.7	14.3
19 Water, sewerage & waste	1.3	0.8	35.7	89.8	9.3
21 Motor vehicles trade	2.9	1.9	68.9	-0.6	10.4
37 Other professional services	2.9	1.5	105.0	84.3	43.2
Group 2 – Specialised in GVA, low absolute productivity but above sector benchmarks					

	% of D2N2 GVA (2015)	% of D2N2 jobs (2015)	% GVA growth (2000/15)	% Jobs growth (2000/15)	% Business Count growth (2010/16)
3 Food, drink & tobacco	2.3	2.2	33.8	8.1	28.2
4 Textiles etc.	0.8	0.9	-47.6	-67.1	-9.6
11 Metals & metal products	1.7	1.6	0.1	-40.6	-1.3
17 Other manufacturing & repair	1.3	1.4	-10.2	-15.4	42.0
23 Retail trade	7.3	9.1	60.6	-5.2	0.3
24 Land transport	2.0	2.0	17.8	-9.9	35.7
27 Warehousing & postal	1.9	2.1	0.9	11.4	39.7
40 Education	7.2	9.2	25.2	1.0	29.2
41 Health	7.1	7.2	67.4	17.7	52.8
Group 3 – Average representation, high absolute productivity but below sector benchmarks					
9 Pharmaceuticals	0.7	0.2	-10.9	-29.6	50.0
Group 4 - Not specialised in GVA & with 4a) high absolute productivity & above sector benchmark					
26 Air transport	0.0	0.0	185.8	-60.5	-20.0
4b) high absolute productivity but below sector benchmarks					
2 Mining & quarrying	0.3	0.2	-65.3	-56.2	-18.2
7 Coke & petroleum	0.0	0.0	-91.2	-	0.0
12 Electronics	0.4	0.3	-49.0	-49.9	-9.1
18 Electricity & gas	0.6	0.4	-60.6	8.9	333.3
31 IT services	3.6	3.0	74.5	46.3	30.2
32 Financial & insurance	2.2	1.4	-14.4	-12.6	22.6
33 Real estate	1.9	1.3	100.6	108.2	14.1
4c) low absolute productivity but above/close to sector benchmarks					
1 Agriculture, forestry & fishing	0.5	0.7	-2.6	-49.5	11.2
20 Construction	6.4	6.0	12.4	-1.8	5.2
28 Accommodation	0.7	1.2	88.7	53.4	13.2
43 Arts	0.4	0.6	28.0	-7.9	6.8
Group 5 - Specialised in GVA but low absolute productivity (also below sector benchmarks)					
5 Wood & paper	0.4	0.5	-1.1	0.0	0.0
38 Business support services	6.0	10.2	131.0	118.1	83.2

	% of D2N2 GVA (2015)	% of D2N2 jobs (2015)	% GVA growth (2000/15)	% Jobs growth (2000/15)	% Business Count growth (2010/16)
Group 6 – Average representation but low absolute productivity (also below sector benchmarks)					
22 Wholesale trade	3.9	3.8	21.5	7.5	-1.9
45 Other services	2.3	3.2	8.0	53.5	12.1
Group 7 – Not specialised in GVA, low absolute productivity (also below sector benchmarks)					
25 Water transport	0.0	0.0	2727.2	-	50.0
29 Food & beverage services	1.6	4.6	0.1	0.0	12.0
30 Media	0.2	0.5	-29.8	39.9	15.1
34 Legal & accounting	0.8	1.5	34.7	4.0	20.7
35 Head offices & management consultancies	0.4	2.1	137.5	224.6	32.0
36 Architectural & engineering services	1.4	1.6	115.9	48.9	31.1
39 Public Administration & Defence	4.1	4.2	1.2	0.5	107.4
42 Residential & social	1.3	5.6	57.1	25.4	26.6
44 Recreational services	0.9	1.6	22.9	28.4	20.5

Source: SQW analysis of CE projections

2.15 Future projections to 2030 are shown in Table 2-3 for each sector of the D2N2 economy, again grouped according to their specialisation and productivity performance and shaded to highlight particularly large changes. The analysis shows that:

- GVA growth is expected in all of the Group 1 sectors, although three of these - Non-metallic mineral products, Electrical equipment, and Machinery - will see large percentage declines in employment.
- The picture is similar in Group 2 where all sectors are expected to grow in GVA terms and just one - Textiles - is expected to see a large fall in employment.
- For the remainder of the ‘mixed picture’ sectors, GVA growth is forecast to be strongest in those sectors with low absolute productivity (Group 4c). No clear narrative emerges for the other Groups, particularly Group 4b where three sectors are predicted to experience falls in GVA and jobs, whilst the other four are all expected to increase their GVA output.

Table 2-3: Projected future trends in D2N2 sectors

	% of D2N2 GVA (2030)	*% of D2N2 jobs (2030)*	**GVA growth (2015/30)**	**Jobs growth (2015/30)**
Group 1 – Specialised in GVA & high absolute productivity				
6 Printing & recording	0.6	0.4	14.7	-11.4
8 Chemicals	1.2	0.4	128.2	10.9
10 Non-metallic mineral products	1.9	0.9	26.6	-40.5
13 Electrical equipment	0.3	0.2	5.4	-29.9
14 Machinery	0.8	0.4	31.8	-39.7
15 Motor vehicles	2.7	0.5	56.0	12.4
16 Other transport equipment	3.0	1.7	12.6	8.8
19 Water, sewerage & waste	1.1	0.8	20.6	2.5
21 Motor vehicles trade	2.6	1.9	17.5	4.5
37 Other professional services	2.5	1.7	12.3	20.2
Group 2 – Specialised in GVA, low absolute productivity but above sector benchmarks				
3 Food, drink & tobacco	2.9	2.3	68.4	13.2
4 Textiles etc.	0.6	0.5	9.1	-41.1
11 Metals & metal products	1.6	1.2	26.0	-18.6
17 Other manufacturing & repair	1.5	1.7	55.7	26.0
23 Retail trade	7.9	9.6	43.4	10.9
24 Land transport	2.0	1.6	28.8	-11.5
27 Warehousing & postal	1.8	2.0	27.6	1.6
40 Education	6.1	8.2	13.9	-7.0
41 Health	7.4	6.4	37.1	-6.7
Group 3 – Average representation, high absolute productivity but below sector benchmarks				
9 Pharmaceuticals	0.5	0.1	-0.1	-26.4
Group 4 - Not specialised in GVA & with 4a) high absolute productivity & above sector benchmark				
26 Air transport	0.0	0.0	33.2	20.0
4b) high absolute productivity but below sector benchmarks				
2 Mining & quarrying	0.1	0.1	-59.7	-51.9
7 Coke & petroleum	0.0	0.0	-26.9	-3.6
12 Electronics	0.2	0.1	-34.2	-68.8
18 Electricity & gas	0.6	0.4	23.1	9.8
31 IT services	3.9	2.9	45.1	4.4
32 Financial & insurance	2.1	1.2	27.4	-7.6

	% of D2N2 GVA (2030)	*% of D2N2 jobs (2030)*	**GVA growth (2015/30)**	**Jobs growth (2015/30)**
33 Real estate	1.8	1.3	29.3	4.5
4c) low absolute productivity but above/close to sector benchmarks				
1 Agriculture, forestry & fishing	0.4	0.4	12.6	-36.5
20 Construction	7.0	6.6	44.6	14.5
28 Accommodation	0.7	1.3	24.2	9.3
43 Arts	0.4	0.7	35.2	22.8
Group 5 - Specialised in GVA but low absolute productivity (also below sector benchmarks)				
5 Wood & paper	0.3	0.3	5.4	-43.3
38 Business support services	5.8	11.7	26.8	20.7
Group 6 – Average representation but low absolute productivity (also below sector benchmarks)				
22 Wholesale trade	3.6	3.8	24.7	6.4
45 Other services	2.1	3.1	21.4	0.1
Group 7 – Not specialised in GVA, low absolute productivity (also below sector benchmarks)				
25 Water transport	0.0	0.0	23.6	-
29 Food & beverage services	1.6	5.0	31.2	13.7
30 Media	0.2	0.5	7.5	-10.0
34 Legal & accounting	0.7	1.4	10.9	-1.7
35 Head offices & management consultancies	0.3	2.2	9.6	8.2
36 Architectural & engineering services	1.1	1.7	8.2	9.3
39 Public Administration & Defence	4.5	4.7	46.6	18.1
42 Residential & social	2.1	6.7	117.1	25.9
44 Recreational services	0.8	1.5	15.4	-4.8

Source: SQW analysis of CE projections

3. Initial thoughts on implications for the SEP

3.1 Given the short timescales for this task, a detailed reflection on the analysis presented above has not been possible. Nor has an investigation into the key assets within each industry, the embeddedness of local supply chains or the strength of the local ecosystem(s). These issues will be considered as part of the interlinked SIA and SEP refresh processes. Instead, this Section presents some initial thoughts on the evidence, which may be useful for D2N2 and partners as the SEP refresh work progresses. It is anticipated by the study team that the development of the new SEP will draw on SQW's wider programme of qualitative research, which will seek to understand the reasons for the growth and decline in specific sectors, to complement the quantitative work set out here. Equally, as work progress on the D2N2 SIA, the emerging findings from that research may also prove useful in shaping future economic development policy imperatives and key focus areas.

Table 3-1: Summary of evidence

Productivity and specialisation	• Strongest performance in productivity and specialisation terms in transport manufacturing (Motor vehicles and Other transport equipment, which includes rail and aerospace), equipment manufacturing (Electrical, Machinery), other manufacturing (Printing and recording, Chemicals, Non-metallic mineral), as well as Water, sewerage and waste, Motor vehicles trade, and Other professional services. • Some specialisation, but lower productivity performance in various manufacturing sub-sectors (Food and drink, Textiles, Metals, Other manufacturing) logistics (Land transport, Warehousing and postal), Retail, Education and Health. • Average or under-representation at present, but high productivity in either absolute/sectoral benchmark terms in some primary industries (Agriculture, Mining), some manufacturing sub-sectors (Coke and petroleum, Pharmaceuticals, Electronics), some services (IT, Finance, Real estate) and other sectors (e.g. Electricity, Construction). • Poor productivity performance across many service sectors (e.g. Business support, Media, legal, head offices, Architectural and engineering, Public Administration).
Current scale	• By some distance, the largest sectors within the D2N2 economy (by share of GVA and jobs) are Business Support Services, Education, Retail trade, Health and Construction. However, these sectors have a lower and mixed productivity performance. Higher productivity sectors such as Electrical equipment and Pharmaceuticals account for a lower share of the economy, especially in terms of jobs. • By far the largest sector in terms of the number of businesses in the D2N2 area is Construction, this is followed by Retail trade and Business support services. • The D2N2 sectors with the largest firms (in employment terms) are Other transport equipment, Public Administration & Defence and Pharmaceuticals.
Past trends and future prospects	• Many of D2N2's specialised, high productivity sectors have generated increased levels of GVA, but shrunk in employment terms since 2000. All are expected to grow their GVA contributions to 2030, but there is more variation on the jobs front. For example, the non-metallic minerals sector is expected to continue to grow in GVA terms, but decline in employment, whilst the Chemicals and Motor vehicles sectors are expected to reverse some of their job losses. • The sectors where D2N2 has a mixed picture on productivity and specialisation have demonstrated great variability in past trends and are expected to continue to do so in the future. The better performing sectors

	tend to be specialised in GVA terms, but with a lower absolute productivity, although the declines in Textiles manufacturing are an exception here. • Sectors that have lower productivity have grown strongly since 2000 and are expected to account for a large share of future jobs and GVA growth. Examples include Business support services and the Wholesale trade.

Source: SQW analysis

Fit with Government policy

3.2 The government's latest thinking is set out in the Industrial Strategy Green Paper.[6] The 'Cultivating world-leading sectors' pillar stops short of identifying the UK's key sectors, but does set out those sectors which are "highly competitive internationally" or have "real competitive advantage", and those where early work on sector deals is underway. It should be noted that not all of the sectors and industries referred to in the Industrial Strategy can easily be captured by the data, this is particularly true for artificial intelligence and satellite technology.

Table 3-2: Industrial Strategy Identified Sector/Industry

Sector/Industry	Reason for identification	Commentary on D2N2 position
Advanced manufacturing, Industrial digitisation	Highly competitive internationally, early work on sector deal	• Manufacturing sub-sectors in D2N2 are of differing strengths and growth trajectories. Sub-sectors with current and projected future strengths include transport equipment manufacture. Other sub-sectors that are currently strong, but projected to lose jobs are Non-metallic mineral products and machinery manufacture. Some sub-sectors are currently low productivity and are expected to decline in both GVA and jobs terms, e.g. Textiles
Financial, legal and business services	Highly competitive internationally	• The majority of these sub-sectors are either 'poor performers' or have a 'mixed picture' in terms of specialisation and GVA, although many have grown rapidly over recent years
Life sciences	Highly competitive internationally, early work on sector deal	• Pharmaceuticals is not specialised and productivity is lower than the sectoral benchmark. The sector has the third largest number of jobs per business in the D2N2 area • Health is specialised in GVA and has above sectoral average productivity. It is also one of the largest sectors • Other elements of life sciences cannot be defined within these datasets.
Digital and creative industries	Highly competitive internationally, early work on sector deal	• According to the GVA data, IT services are not particularly specialised and the sector suffers from lower productivity than sectoral benchmarks. However, it is a growing industry and is expected to continue on this positive trajectory in the future. • Similarly, the Arts sector is not specialised in GVA and has low productivity (by absolute standards). It has recently seen a decline in jobs,

[6] https://beisgovuk.citizenspace.com/strategy/industrial-strategy/supporting_documents/buildingourindustrialstrategygreenpaper.pdf

Sector/Industry	Reason for identification	Commentary on D2N2 position
		but is expected to grow in both GVA and jobs terms in the future.
Artificial intelligence	Real competitive advantage	• Cannot be defined within the available datasets as this cuts across multiple industries.
Satellite technology	Real competitive advantage	• Cannot be defined within the available datasets as this cuts across multiple industries.
Ultra low emissions vehicles	Early sector deal	• Not easy to define using the available data. Taking Motor vehicles as the best match, this manufacturing sub-sector is specialised, highly productive and forecast to grow in the future.
Nuclear	Early sector deal	• Cannot be defined within the available data as this cuts across multiple industries.

Source: SQW analysis

Fit with D2N2 growth sectors

3.3 The original D2N2 SEP identified eight growth sectors. Commentary on the extent to which the data analysis presented above supports the eight growth sectors is provided in the table below. Where the D2N2 sector definitions do not fit with the CE defined sectors, additional BRES data are provided using the D2N2 definition.

Table 3-3: D2N2 Growth Sectors as set out in the original SEP

Original D2N2 Growth Sector	Commentary
Transport equipment manufacturing	• Motor vehicle and Other transport equipment manufacturing are specialised, highly productive and forecast to grow in the future. Other transport equipment manufacturing has the largest average employment per business of any D2N2 sector.
Life sciences	• Pharmaceuticals is not specialised and productivity is lower than the sectoral benchmark. The sector has the third largest number of jobs per business in D2N2. • Health is specialised in GVA and has above sectoral average productivity. It is also one of the largest sectors in terms of both jobs and GVA. • Other elements of life sciences cannot be defined within the CE datasets • Using the D2N2 definition, employment in 2015 was 6k, meaning D2N2 is less specialised than would be expected (LQ = 0.69). In addition, there has been a 14% fall in employment since 2009.
Food and drink manufacturing	• Food and drink manufacturing is specialised in GVA and more productive than sector benchmarks, although below the national level of productivity. It accounts for over 2% of both D2N2's GVA and jobs, and is growing on both measures.
Construction	• Construction is slightly over-represented in terms of GVA, slightly under-represented in jobs and productivity is just below the sectoral benchmark. It accounts for c.6% of both D2N2's GVA and jobs and is the largest D2N2 sector in terms of the size of the business stock. Over the past 15 years, GVA has grown, but employment levels have fallen. Both indicators are expected to rise in the future.

Original D2N2 Growth Sector	Commentary
Visitor economy	• Accommodation services is not specialised in GVA and has low productivity (by absolute standards). It accounts for less than 1.5% of all D2N2 jobs, but is a growing sector in both employment and GVA terms. • Food and beverages services is not specialised in GVA and has low productivity. However, it accounts for c.4.5% of all D2N2 jobs and 1.5% of GVA. The sector has remained static in terms of GVA and employment since 2000, although is expected to grow in the future. • Using the D2N2 definition, employment in 2015 was 73k. However, this is less than would be expected (LQ = 0.81) and employment in the sector has fallen by 11% since 2009.
Low carbon economy	• Cannot be defined in the available data as this cuts across multiple industries.
Transport and logistics	• Land transport is specialised in GVA and more productive than sector benchmarks. It has recently seen a decline in jobs but is expected to grow in both GVA and jobs terms in the future. • Warehousing and postal is specialised in GVA and more productive than sector benchmarks. It is forecast to grow in terms of both GVA and jobs in the future. • Air transport and Water transport are both very small sectors for D2N2 in employment and GVA terms.
Creative industries	• IT services is not specialised in GVA and has lower productivity than sectoral benchmarks. However, it is a growing industry and is expected to continue on this positive trajectory in the future. • Similarly, the Arts sector is not specialised in GVA and has low productivity (by absolute standards). It has recently seen a decline in jobs, but is expected to grow in both GVA and jobs terms in the future. • Using the D2N2 definition, employment in 2015 was 31k. However, this is less than would be expected (LQ = 0.68) and employment in the sector has fallen by 23% since 2009.

Source: SQW analysis

Bringing it all together

3.4 The table below provides a headline "RAG" (red, amber, green) assessment drawing on the evidence presented above on specialisation, productivity, scale and past trends. Future trends are not included here as these are only predictions of what might happen and can be altered by policy interventions. All D2N2 growth sectors, apart from the low carbon economy which cuts across multiple sub-sectors, are shown. As the only other sector referenced in the Industrial Strategy which is easily identifiable in the data but not already included within the table, the Financial, legal and business services are also shown. The criteria used to determine the shading are as follows:

- **GVA specialisation** – sub-sectors with a GVA LQ greater than 1 (more specialised than the UK as a whole) are shaded green, those with an LQ of 1 (i.e. average representation) are shaded amber, whilst those with an LQ of less than one are shaded red
- **Productivity** – sub-sectors where productivity is higher than the whole economy national average are shaded green, those where productivity is higher than the sub-sectoral average, but lower than the national whole economy average are shaded

amber, and those with productivity lower than both the sub-sectoral *and* national average are shaded red

- **Scale of GVA and jobs** – sub-sectors accounting for more than 3% of D2N2's GVA and/or jobs are shaded green, those accounting for between 1.5% and 3.% of GVA and/or jobs are shaded amber, whilst those accounting for less than 1.5% of GVA and jobs are shaded red
- **GVA direction of travel** – sub-sectors where GVA has increased faster than the national sub-sectoral level are shaded green, those where GVA has increased more slowly than the national sub-sectoral average are shaded amber, whilst those where GVA has fallen are shaded red.

Table 3-4: Summary of sectoral analysis

D2N2 / Industrial Strategy sector	Relevant sub-sectors	GVA specialisation (2015)	Productivity (2015)	Scale of GVA and jobs (2015)	GVA direction of travel (2000-2015)
Transport equipment manufacturing	Motor vehicles				
	Other transport equipment				
Life sciences	Pharmaceuticals				
	Health				
Food and drink manufacturing	Food, drink & tobacco				
Construction	Construction				
Visitor economy	Accommodation				
	Food & beverages				
Transport and Logistics	Land transport				
	Warehousing & postal				
Creative industries	IT services				
	Arts				
Financial, legal and business services	Financial & insurance				
	Real estate				
	Legal & accounting				
	Head offices & management consultancies				
	Architectural & engineering services				
	Other professional services				
	Business support services				

Source: SQW analysis

Annex A: Detailed Data Analysis

A.1 This section presents detailed data tables to underpin the analysis presented in the main body of the report.

Specialisation

GVA

A.2 In the table below, D2N2's Location Quotient (LQ) is presented for GVA, whereby the share of GVA generated in each sector in D2N2 is compared to the equivalent share across the UK as a whole. A value of 1 means that the sector is as represented in D2N2 as in the UK; a value of above 1 indicates a sector is over-represented or 'specialised' in D2N2 compared to the UK; and a value of less than 1 indicates a sector is under-represented in D2N2 compared to the UK. The table also presents changes in specialisation between 2000 and 2015, and expected changes through to 2030.

Table A-1: D2N2 GVA by sector – LQs and changes in specialisation

	Current LQ (2015)	Past change in LQ (2000/15)	Forecast change in LQ (2015/30)
	LQ > 1		
16 Other transport equipment	3.9	-0.6	-0.1
4 Textiles etc.	2.8	-0.4	-0.1
15 Motor vehicles	2.7	0.5	0.3
10 Non-metallic mineral products	2.7	0.7	-0.3
6 Printing & recording	2.6	1.6	-0.4
3 Food, drink & tobacco	1.7	0.3	0.4
11 Metals & metal products	1.7	-0.2	0.1
17 Other manufacturing & repair	1.5	-0.2	0.2
14 Machinery	1.4	0.1	0.1
37 Other professional services	1.4	0.2	-0.1
13 Electrical equipment	1.3	-0.1	0.0
41 Health	1.3	-0.1	-0.1
23 Retail trade	1.3	0.1	0.0
21 Motor vehicles trade	1.3	0.0	0.0
8 Chemicals	1.3	-0.1	0.4
24 Land transport	1.1	0.0	0.0
38 Business support services	1.1	0.2	0.0
5 Wood & paper	1.1	0.1	-0.2
19 Water, sewerage & waste	1.1	0.1	0.0

	Current LQ (2015)	Past change in LQ (2000/15)	Forecast change in LQ (2015/30)
40 Education	1.1	0.1	-0.1
27 Warehousing & postal	1.1	0.2	-0.1
LQ = 1			
20 Construction	1.0	-0.1	0.0
22 Wholesale trade	1.0	0.0	0.0
45 Other services	1.0	-0.1	-0.1
9 Pharmaceuticals	1.0	-0.3	0.0
LQ < 1			
1 Agriculture, forestry & fishing	0.9	-0.1	-0.1
39 Public Administration & Defence	0.9	0.0	0.1
28 Accommodation	0.9	0.1	0.0
43 Arts	0.9	-0.2	0.0
44 Recreational services	0.8	0.0	0.0
29 Food & beverage services	0.8	-0.3	-0.1
31 IT services	0.8	-0.1	-0.1
42 Residential & social	0.8	0.1	0.2
36 Architectural & engineering services	0.7	0.0	0.0
18 Electricity & gas	0.7	-1.1	0.0
12 Electronics	0.6	-0.2	-0.1
33 Real estate	0.6	-0.1	0.0
32 Financial & insurance	0.3	-0.2	0.0
35 Head offices & management consultancies	0.3	-0.1	0.0
34 Legal & accounting	0.3	-0.1	0.0
2 Mining & quarrying	0.2	0.0	-0.1
30 Media	0.1	-0.1	0.0
25 Water transport	0.1	0.1	0.0
7 Coke & petroleum	0.0	-0.3	0.0
26 Air transport	0.0	0.0	0.0

Source: SQW analysis of CE projections

Employment

A.3 In the table below, D2N2's Location Quotient (LQ) is presented for jobs, whereby the share of jobs in each sector in D2N2 is compared to the equivalent share across the UK as a whole. A value of 1 means that the sector is as represented in D2N2 as the UK; a value of above 1 indicates a sector is over-represented or 'specialised' in D2N2 compared to the UK; and a value of less than 1 indicates a sector is under-represented in D2N2 compared to the UK. The table then presents changes in specialisation between 2000 and 2015, and expected changes through to 2030.

Table A-2: D2N2 jobs by sector – LQs and changes in specialisation

	Current LQ (2015)	Past change in LQ (2000/15)	Forecast change in LQ (2015/2030)
LQ > 1			
16 Other transport equipment	3.9	0.2	0.8
4 Textiles etc.	2.6	-0.3	-0.1
10 Non-metallic mineral products	2.0	0.2	-0.3
3 Food, drink & tobacco	1.6	0.4	0.6
17 Other manufacturing & repair	1.5	0.3	0.5
11 Metals & metal products	1.4	-0.1	0.1
9 Pharmaceuticals	1.4	0.1	0.0
19 Water, sewerage & waste	1.4	0.5	0.0
5 Wood & paper	1.3	0.4	-0.3
38 Business support services	1.2	0.5	0.0
6 Printing & recording	1.2	0.5	-0.2
8 Chemicals	1.2	-0.4	0.5
45 Other services	1.1	0.4	-0.1
21 Motor vehicles trade	1.1	0.1	0.0
15 Motor vehicles	1.1	-0.2	0.5
14 Machinery	1.1	0.1	0.0
40 Education	1.1	-0.3	-0.1
LQ = 1			
42 Residential & social	1.0	-0.1	0.1
31 IT services	1.0	0.2	-0.1
23 Retail trade	1.0	0.0	0.0
41 Health	1.0	-0.1	-0.1
22 Wholesale trade	1.0	0.1	0.0
24 Land transport	1.0	-0.1	0.1
20 Construction	1.0	-0.1	0.0
2 Mining & quarrying	1.0	-1.1	-0.4
LQ < 1			
39 Public Administration & Defence	0.9	0.1	0.1
13 Electrical equipment	0.9	0.0	-0.1

	Current LQ (2015)	Past change in LQ (2000/15)	Forecast change in LQ (2015/2030)
18 Electricity & gas	0.9	-0.2	0.0
29 Food & beverage services	0.9	-0.2	-0.1
27 Warehousing & postal	0.9	-0.2	0.0
44 Recreational services	0.9	0.0	-0.1
36 Architectural & engineering services	0.8	0.0	0.0
28 Accommodation	0.8	0.2	0.0
33 Real estate	0.8	0.2	-0.1
35 Head offices & management consultancies	0.8	0.1	0.0
37 Other professional services	0.7	0.2	0.0
34 Legal & accounting	0.7	-0.1	0.0
12 Electronics	0.6	-0.1	-0.2
43 Arts	0.6	-0.1	0.0
1 Agriculture, forestry & fishing	0.6	-0.5	-0.1
30 Media	0.5	0.1	-0.1
32 Financial & insurance	0.4	0.0	0.0
7 Coke & petroleum	0.1	0.1	0.0
26 Air transport	0.0	0.0	0.0
25 Water transport	0.0	0.0	0.0

Source: SQW analysis of CE projections

Productivity

A.4 The table below is ranked by D2N2's productivity by sector (highest to lowest). The second column presents D2N2's sectoral productivity as a percentage of UK whole economy average (£46.1k). In the last column, sectors are highlighted in green if they exceed the respective UK sector benchmark and in amber if they are 90% - 100% of the respective UK sector benchmark.

Table A-3: D2N2 productivity by sector

	D2N2 productivity	D2N2 productivity as % of UK whole economy average	D2N2 productivity as % of UK sector benchmark
More productive than the UK whole economy average			
26 Air transport*	318,800	692	341
15 Motor vehicles*	199,345	432	216
9 Pharmaceuticals	140,528	305	62
16 Other transport equipment	90,142	196	89
7 Coke & petroleum	90,071	195	35

	D2N2 productivity	D2N2 productivity as % of UK whole economy average	D2N2 productivity as % of UK sector benchmark
37 Other professional services*	80,550	175	170
8 Chemicals	76,855	167	93
6 Printing & recording*	70,726	153	190
18 Electricity & gas	70,369	153	64
32 Financial & insurance	64,970	141	64
19 Water, sewerage & waste	64,382	140	73
2 Mining & quarrying	64,219	139	17
13 Electrical equipment*	63,214	137	125
21 Motor vehicles trade*	61,399	133	100
33 Real estate	59,022	128	61
12 Electronics	54,980	119	86
14 Machinery*	54,525	118	112
10 Non-metallic mineral products*	52,623	114	120
31 IT services	49,797	108	66
Less productive than the UK whole economy average of £46,100			
11 Metals & metal products*	43,859	95	103
20 Construction*	43,773	95	97
3 Food, drink & tobacco	43,565	95	92
24 Land transport*	42,902	93	105
22 Wholesale trade	41,691	90	89
41 Health*	40,870	89	116
39 Public Administration & Defence	39,509	86	80
27 Warehousing & postal*	36,705	80	112
17 Other manufacturing & repair	36,704	80	91
36 Architectural & engineering services	35,642	77	75
4 Textiles etc.*	35,058	76	98
5 Wood & paper	33,605	73	79
23 Retail trade*	33,065	72	112
40 Education	31,749	69	92
45 Other services	29,449	64	75
1 Agriculture, forestry & fishing*	28,211	61	134
28 Accommodation	24,886	54	91
43 Arts*	24,334	53	119

	D2N2 productivity	D2N2 productivity as % of UK whole economy average	D2N2 productivity as % of UK sector benchmark
38 Business support services	24,231	53	81
34 Legal & accounting	22,155	48	36
44 Recreational services	22,070	48	86
30 Media	18,861	41	27
29 Food & beverage services	14,526	32	81
42 Residential & social	9,470	21	65
35 Head offices & management consultancies	8,041	17	34
D2N2 total average	**40,971**	**89**	**89**

Source: SQW analysis of CE projections

Trends over time

GVA

A.5 D2N2's sectors are grouped into four categories in the table below.

- Recent growth and future projected growth
- Recent growth but future projected decline[7]
- Recent decline but future projected growth
- Recent decline and future projected decline

Table A-4: D2N2 GVA by sector

	GVA growth - 2000/15 (%)	GVA growth - 2015/30 (%)	GVA in 2015 (£2011m)	GVA in 2030 (2011m)	Absolute change, current-2030
Recent growth and future projected growth					
25 Water transport	2,727	24	8	10	2
26 Air transport	186	33	5	6	2
35 Head offices & management consultancies	138	10	175	192	17
38 Business support services	131	27	2,533	3,212	678
36 Architectural & engineering services	116	8	584	632	48
37 Other professional services	105	12	1,227	1,377	150
33 Real estate	101	29	791	1,023	232

[7] Note, there were no sectors in this category.

	GVA growth - 2000/15 (%)	**GVA growth - 2015/30** (%)	**GVA in 2015 (£2011m)**	**GVA in 2030 (2011m)**	**Absolute change, current-2030**
6 Printing & recording	91	15	302	347	44
28 Accommodation	89	24	311	386	75
16 Other transport equipment	76	13	1,496	1,685	189
31 IT services	74	45	1,507	2,187	680
21 Motor vehicles trade	69	18	1,219	1,433	214
41 Health	67	37	2,993	4,103	1,110
15 Motor vehicles	64	56	973	1,518	545
23 Retail trade	61	43	3,074	4,408	1,333
42 Residential & social	57	117	539	1,171	631
19 Water, sewerage & waste	36	21	524	632	108
34 Legal & accounting	35	11	332	368	36
3 Food, drink & tobacco	34	68	958	1,613	655
43 Arts	28	35	156	210	55
10 Non-metallic mineral products	26	27	840	1,063	223
40 Education	25	14	2,997	3,414	417
44 Recreational services	23	15	370	427	57
22 Wholesale trade	21	25	1,616	2,015	399
24 Land transport	18	29	855	1,102	247
20 Construction	12	45	2,694	3,894	1,201
45 Other services	8	21	977	1,186	209
14 Machinery	7	32	352	464	112
39 Public Administration & Defence	1	47	1,700	2,491	792
27 Warehousing & postal	1	28	783	999	216
8 Chemicals	1	128	295	673	378
29 Food & beverage services	0	31	686	901	214
11 Metals & metal products	0	26	719	906	187
Recent decline but future projected growth					
5 Wood & paper	-1	5	174	184	9

	GVA growth - 2000/15 (%)	GVA growth - 2015/30 (%)	GVA in 2015 (£2011m)	GVA in 2030 (2011m)	Absolute change, current-2030
1 Agriculture, forestry & fishing	-3	13	203	229	26
17 Other manufacturing & repair	-10	56	542	844	302
32 Financial & insurance	-14	27	915	1,166	251
13 Electrical equipment	-26	5	155	164	8
30 Media	-30	7	102	110	8
4 Textiles etc.	-48	9	317	346	29
18 Electricity & gas	-61	23	260	320	60
Recent decline and future projected decline					
9 Pharmaceuticals	-11	-0.1	282	281	-0.4
12 Electronics	-49	-34	156	103	-53
2 Mining & quarrying	-65	-60	142	57	-85
7 Coke & petroleum	-91	-27	3	2	-1

Source: SQW analysis of CE projections

Employment

A.6 D2N2's sectors are grouped into four categories in the table below:

- Recent growth and future projected growth
- Recent growth but future projected decline
- Recent decline but future projected growth
- Recent decline and future projected decline

Table A-5: D2N2 jobs by sector

	Jobs growth 2000/15 (%)	Jobs growth 2015/30 (%)	Jobs in 2015 (000s)	Jobs in 2030 (000s)	Absolute change (000s) current-2030
Recent growth and future projected growth					
35 Head offices & management consultancies	225	8	22	24	2
38 Business support services	118	21	105	126	22
33 Real estate	108	4	13	14	1
19 Water, sewerage & waste	90	3	8	8	0
37 Other professional services	84	20	15	18	3

	Jobs growth 2000/15 (%)	Jobs growth 2015/30 (%)	Jobs in 2015 (000s)	Jobs in 2030 (000s)	Absolute change (000s) current-2030
45 Other services	54	0	33	33	0
28 Accommodation	53	9	12	14	1
36 Architectural & engineering services	49	9	16	18	2
31 IT services	46	4	30	32	1
42 Residential & social	25	26	57	72	15
27 Warehousing & postal	11	2	21	22	0
18 Electricity & gas	9	10	4	4	0
3 Food, drink & tobacco	8	6	39	41	2
22 Wholesale trade	2	9	17	18	1
16 Other transport equipment	0	18	43	51	8
39 Public Administration & Defence	8	6	39	41	2
Recent growth but future projected decline					
30 Media	40	-10	5	5	-1
44 Recreational services	28	-5	17	16	-1
41 Health	18	-7	73	68	-5
34 Legal & accounting	4	-2	15	15	0
40 Education	1	-7	94	88	-7
Recent decline but future projected growth					
29 Food & beverage services	0	14	47	54	6
21 Motor vehicles trade	-1	4	20	21	1
20 Construction	-2	14	62	70	9
23 Retail trade	-5	11	93	103	10
43 Arts	-8	23	6	8	1
17 Other manufacturing & repair	-15	26	15	19	4
15 Motor vehicles	-54	12	5	5	1
8 Chemicals	-55	11	4	4	0
26 Air transport	-61	20	0	0	0
Recent decline and future projected decline					
5 Wood & paper	0	-43	5	3	-2
24 Land transport	-10	-12	20	18	-2

	Jobs growth 2000/15 (%)	Jobs growth 2015/30 (%)	Jobs in 2015 (000s)	Jobs in 2030 (000s)	Absolute change (000s) current-2030
32 Financial & insurance	-13	-8	14	13	-1
6 Printing & recording	-22	-11	4	4	0
9 Pharmaceuticals	-30	-26	2	1	-1
10 Non-metallic mineral products	-30	-41	16	9	-6
14 Machinery	-33	-40	6	4	-3
11 Metals & metal products	-41	-19	16	13	-3
13 Electrical equipment	-48	-30	2	2	-1
1 Agriculture, forestry & fishing	-50	-37	7	5	-3
12 Electronics	-50	-69	3	1	-2
2 Mining & quarrying	-56	-52	2	1	-1
4 Textiles etc.	-67	-41	9	5	-4
7 Coke & petroleum	-	-4	0	0	0
25 Water transport	-	-	0	0	0

Source: SQW analysis of CE projections

Business counts

A.7 The table below provides the latest available data for business counts. It is ordered by the percentage increase of businesses in each sector.

Table A-6: D2N2 businesses by sector

	Business count, 2010	Business count, 2016	Absolute change (2010-2016)	Percentage change (2010 – 2016)
Growing business stock				
18 Electricity & gas	15	65	50	333
39 Public Administration & Defence	135	280	145	107
38 Business support services	3,850	7,055	3,205	83
41 Health	1,165	1,780	615	53
9 Pharmaceuticals	10	15	5	50
25 Water transport	10	15	5	50
37 Other professional services	1,760	2,520	760	43
17 Other manufacturing & repair	870	1,235	365	42

	Business count, 2010	Business count, 2016	Absolute change (2010-2016)	Percentage change (2010 – 2016)
27 Warehousing & postal	630	880	250	40
24 Land transport	1,610	2,185	575	36
35 Head offices & management consultancies	2,720	3,590	870	32
36 Architectural & engineering services	2,040	2,675	635	31
31 IT services	2,650	3,450	800	30
40 Education	960	1,240	280	29
3 Food, drink & tobacco	195	250	55	28
42 Residential & social	1,295	1,640	345	27
32 Financial & insurance	1,130	1,385	255	23
34 Legal & accounting	1,305	1,575	270	21
44 Recreational services	730	880	150	21
Total	60,265	71,965	11,700	19
30 Media	430	495	65	15
16 Other transport equipment	70	80	10	14
33 Real estate	2,160	2,465	305	14
13 Electrical equipment	110	125	15	14
28 Accommodation	265	300	35	13
45 Other services	2,635	2,955	320	1
29 Food & beverage services	3,635	4,070	435	12
1 Agriculture, forestry & fishing	3,340	3,715	375	11
21 Motor vehicles trade	2,445	2,700	255	10
19 Water, sewerage & waste	9 215	235	20	9
43 Arts	440	470	30	7
20 Construction	8,615	9,065	450	5
23 Retail trade	5,795	5,810	15	0
Static business stock				
5 Wood & paper	430	430	-	0

	Business count, 2010	Business count, 2016	Absolute change (2010-2016)	Percentage change (2010 – 2016)
7 Coke & petroleum	5	5	-	0
Declining business stock				
11 Metals & metal products	1,190	1,175	-15	-1
22 Wholesale trade	3,195	3,135	-60	-2
10 Non-metallic mineral products	475	455	-20	-4
8 Chemicals	110	105	-5	-5
15 Motor vehicles	125	115	-10	-8
12 Electronics	220	200	-20	-9
4 Textiles etc.	365	330	-35	-10
14 Machinery	375	335	-40	-11
6 Printing & recording	465	400	-65	-14
2 Mining & quarrying	55	45	-10	-18
26 Air transport	25	20	-5	-20

Source: SQW analysis of UK Business Counts

Annex B: Mapping the 45 LEFM Sectors against SIC codes

B.1 The table below provides a SIC code definition for each of the 45 sectors used in the LEFM.

Table B-1: Comparing the 45 sectors to SIC 2007 codes

LEFM sector	SIC 2007 codes	Details of SIC codes
1. Agriculture, Forestry and Fishing	01-03	01 Crop and animal production, hunting and related service activities 02 Forestry and logging 03 Fishing and aquaculture
2. Mining and Quarrying	05-09	05 Mining of coal and lignite 06 Extraction of crude petroleum and natural gas 07 Mining of metal ores 08 Other mining and quarrying 09 Mining support service activities
3. Food, drink & tobacco	10-12	10 Manufacture of food products 11 Manufacture of beverages 12 Manufacture of tobacco products
4. Textiles etc.	13-15	13 Manufacture of textiles 14 Manufacture of wearing apparel 15 Manufacture of leather and related products
5. Wood & paper	16-17	16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials 17 Manufacture of paper and paper products
6. Printing & recording	18	18 Printing and reproduction of recorded media
7. Coke & petroleum	19	19 Manufacture of coke and refined petroleum products
8. Chemicals	20	20 Manufacture of chemicals and chemical products
9. Pharmaceuticals	21	21 Manufacture of basic pharmaceutical products and pharmaceutical preparations
10. Non-metallic mineral products	22-23	22 Manufacture of rubber and plastic products 23 Manufacture of other non-metallic mineral products
11. Metals & metal products	24-25	24 Manufacture of basic metals 25 Manufacture of fabricated metal products, except machinery and equipment
12. Electronics	26	26 Manufacture of computer, electronic and optical products

LEFM sector	SIC 2007 codes	Details of SIC codes
13. Electrical equipment	27	27 Manufacture of electrical equipment
14. Machinery	28	28 Manufacture of machinery and equipment n.e.c.
15. Motor vehicles	29	29 Manufacture of motor vehicles, trailers and semi-trailers
16. Other transport equipment	30	30 Manufacture of other transport equipment
17. Other manufacturing & repair	31-33	31 Manufacture of furniture 32 Other manufacturing 33 Repair and installation of machinery and equipment
18. Electricity & gas	35	35 Electricity, gas, steam and air conditioning supply
19. Water, sewage & waste	36-39	36 Water collection, treatment and supply 37 Sewerage 38 Waste collection, treatment and disposal activities; materials recovery 39 Remediation activities and other waste management services
20. Construction	41-43	41 Construction of buildings 42 Civil engineering 43 Specialised construction activities
21. Motor vehicles trade	45	45 Wholesale and retail trade and repair of motor vehicles and motorcycles
22. Wholesale trade	46	46 Wholesale trade, except of motor vehicles and motorcycles
23. Retail trade	47	47 Retail trade, except of motor vehicles and motorcycles
24. Land transport	49	49 Land transport and transport via pipelines
25. Water transport	50	50 Water transport
26. Air transport	51	51 Air transport
27. Warehousing & postal	52-53	52 Warehousing and support activities for transportation 53 Postal and courier activities
28. Accommodation	55	55 Accommodation
29. Food & beverage services	56	56 Food and beverage service activities
30. Media	58-60	58 Publishing activities 59 Motion picture, video and television programme production, sound recording and music publishing activities 60 Programming and broadcasting activities
31. IT services	61-63	61 Telecommunications 62 Computer programming, consultancy and related activities 63 Information service activities

LEFM sector	SIC 2007 codes	Details of SIC codes
32. Financial & insurance	64-66	64 Financial service activities, except insurance and pension funding 65 Insurance, reinsurance and pension funding, except compulsory social security 66 Activities auxiliary to financial services and insurance activities
33. Real estate	68	68 Real estate activities
34. Legal & accounting	69	69 Legal and accounting activities
35. Head offices & management consultancies	70	70 Activities of head offices; management consultancy activities
36. Architectural & engineering services	71	71 Architectural and engineering activities; technical testing and analysis
37. Other professional services	72-75	72 Scientific research and development 73 Advertising and market research 74 Other professional, scientific and technical activities 75 Veterinary activities
38. Business support services	77-82	77 Rental and leasing activities 78 Employment activities 79 Travel agency, tour operator and other reservation service and related activities 80 Security and investigation activities 81 Services to buildings and landscape activities 82 Office administrative, office support and other business support activities
39. Public Administration & Defence	84	84 Public administration and defence; compulsory social security
40. Education	85	85 Education
41. Health	86	86 Human health activities
42. Residential & social	87-88	87 Residential care activities 88 Social work activities without accommodation
43. Arts	90-91	90 Creative, arts and entertainment activities 91 Libraries, archives, museums and other cultural activities
44. Recreational services	92-93	92 Gambling and betting activities 93 Sports activities and amusement and recreation activities
45. Other services	94-96	94 Activities of membership organisations 95 Repair of computers and personal and household goods 96 Other personal service activities

Annex C: D2N2 Priority Sector Definitions

C.1 The SIC code definitions of seven of the priority sectors from the D2N2 SEP are presented below. Note that the SEP did not define the low carbon industries sector using SIC codes.

Table C-1: D2N2 Priority Sector Definitions

Priority sector	Details of SIC codes
Construction	F : Construction
Creative industries	7311 : Advertising agencies
	7312 : Media representation
	7111 : Architectural activities
	47781 : Retail sale in commercial art galleries
	47791 : Retail sale of antiques including antique books, in stores
	1411 : Manufacture of leather clothes
	1412 : Manufacture of workwear
	1413 : Manufacture of other outerwear
	1414 : Manufacture of underwear
	1419 : Manufacture of other wearing apparel and accessories
	1420 : Manufacture of articles of fur
	1431 : Manufacture of knitted and crocheted hosiery
	1439 : Manufacture of other knitted and crocheted apparel
	1512 : Manufacture of luggage, handbags and the like, saddlery and harness
	1520 : Manufacture of footwear
	7410 : Specialised design activities
	7420 : Photographic activities
	1811 : Printing of newspapers
	1813 : Pre-press and pre-media services
	1820 : Reproduction of recorded media
	5911 : Motion picture, video and television programme production activities
	5912 : Motion picture, video and television programme post-production activities
	5913 : Motion picture, video and television programme distribution activities
	5914 : Motion picture projection activities
	5920 : Sound recording and music publishing activities
	9001 : Performing arts
	9002 : Support activities to performing arts
	9003 : Artistic creation
	9004 : Operation of arts facilities
	78101 : Motion picture, television and other theatrical casting

	5811 : Book publishing
	5813 : Publishing of newspapers
	5814 : Publishing of journals and periodicals
	5819 : Other publishing activities
	5821 : Publishing of computer games
	5829 : Other software publishing
	6010 : Radio broadcasting
	6020 : Television programming and broadcasting activities
	6201 : Computer programming activities
	6202 : Computer consultancy activities
	6203 : Computer facilities management activities
	6209 : Other information technology and computer service activities
	58120 : Publishing of directories and mailing lists
	18129 : Printing (other than printing of newspapers and printing on labels and tags) nec
Food and drink manufacturing	10 : Manufacture of food products
	11 : Manufacture of beverages
Life sciences	2660 : Manufacture of irradiation, electromedical and electrotherapeutic equipment
	21 : Manufacture of basic pharmaceutical products and pharmaceutical preparations
	47749 : Retail sale of medical and orthopaedic goods (other than hearing aids) nec, in specialised stores
	46460 : Wholesale of pharmaceutical goods
	325 : Manufacture of medical and dental instruments and supplies
	721 : Research and experimental development on natural sciences and engineering
Transport and logistics	49 : Land transport and transport via pipelines
	50 : Water transport
	51 : Air transport
	52 : Warehousing and support activities for transportation
	5320 : Other postal and courier activities
Transport equipment manufacturing	29 : Manufacture of motor vehicles, trailers and semi-trailers
	30 : Manufacture of other transport equipment
Visitor economy	55: Hotels
	56 : Food and beverage service activities
	79 : Travel agency, tour operator and other reservation service and related activities
	90 : Creative, arts and entertainment activities
	91 : Libraries, archives, museums and other cultural activities
	93 : Sports activities and amusement and recreation activities

Source: D2N2