

INDUSTRY INSIGHTS

Construction Skills Network
East Midlands 2015-2019



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1 Summary – East Midlands

Construction output in the East Midlands is forecast to see annual average growth of 2.2% in the five years to 2019, below the equivalent UK rate of 2.9%. Employment growth is expected to average 1.1% over the forecast period, slightly below the UK average of 1.5%. The region's annual recruitment requirement (ARR) of 3,120 represents 1.9% of base 2015 employment, which is slightly higher than the UK average of 1.7%.

Annual average construction output growth 2015-2019 – East Midlands



Source: CSN, Experian
ref. CSN Explained, Section 3, Note 2



Construction output in the East Midlands is forecast to see annual average growth of 2.2% in the five years to 2019.

1.1 Key findings

Construction output in the East Midlands fell by 4% in 2013 to £6.35bn in 2010 prices, although it should have returned to growth in 2014. We expect it to expand at an annual rate of 2.2% over the forecast period (2015-2019).

Private housing is set for the strongest growth over the forecast period, at an average annual rate of 6.1%. The bulk of the expansion is expected to take place in the earlier part of the forecast period, before it moderates towards the latter end. By 2019 output in the sector should be fairly close to its 2006 peak.

The public non-housing and industrial sectors are also set to expand at a robust pace, with respective annual average growth rates of 2.5% and 2.6% in the five years to 2019. The former is expected to return to growth in 2015 after three successive annual declines. There are large projects in the pipeline, such as Northampton University's £1bn waterside campus which should start and finish within the forecast period, but, in spite of this, output for the sector in 2019 is expected to remain well below its 2011 peak.

Infrastructure output is forecast to grow at an annual average rate of 2.4% in the five years to 2019. However expansion in activity for the sector isn't expected to occur until the second half of the forecast period. The return to growth will coincide with the start of construction work on the £1bn conversion of Willington C power station from coal to gas.

Public housing output growth is expected to flatten out over the forecast period, with predicted annual average growth of 0.3%. It is set to remain depressed until 2017 when it should tick upwards at a single digit rate in each remaining year to 2019. The pipeline of new work is slim and this is reflected in our forecasts. By the end of the forecast period output will be 20% below its 2010 peak on this prognosis.

The East Midland's annual recruitment requirement (ARR) of 3,120 represents 1.9% of base 2015 employment, which is slightly higher than the UK average of 1.7%.

The commercial sector is the only one set to contract (0.6%) on an annual average basis over the forecast period. The weakness in recent new orders figures and a dearth of sizeable projects indicate significant falls in output in 2014 and 2015.

Employment growth is expected to average 1.1% over the forecast period, below the UK average of 1.5%. Civil engineers should see the strongest annual average employment growth (4.2%). Surveyors (3.6%), other construction professionals (3.3%), and construction trade supervisors (2.9%) are set to follow. The majority of occupational aggregates are forecast to see growth (19 out of 28) in the five years to 2019. However, the proportion which are not set to expand is somewhat higher than a number of other regions and devolved nations.

The East Midland's annual recruitment requirement (ARR) of 3,120 represents 1.9% of base 2015 employment, which is slightly higher than the UK average of 1.7%. Labourers nec. are set to have the highest absolute requirement at 470.

Regional comparison 2015-2019

	Annual average % change in output	Growth in total employment	Total ARR
North East	2.3%	7,660	3,510
Yorkshire and Humber	2.3%	14,940	3,220
East Midlands	2.2%	9,340	3,120
East of England	2.5%	13,690	4,260
Greater London	4.2%	50,440	2,050
South East	2.5%	30,130	2,590
South West	3.6%	22,130	6,320
Wales	5.8%	13,890	5,320
West Midlands	2.1%	12,110	2,320
Northern Ireland	2.2%	3,220	1,490
North West	2.5%	17,130	4,790
Scotland	1.1%	1,320	5,700
UK	2.9%	196,000	44,690

Source: CSN, Experian
ref. CSN Explained, Section 3, Note 2

2 The outlook for construction in the East Midlands

2.1 Construction output in East Midlands – overview

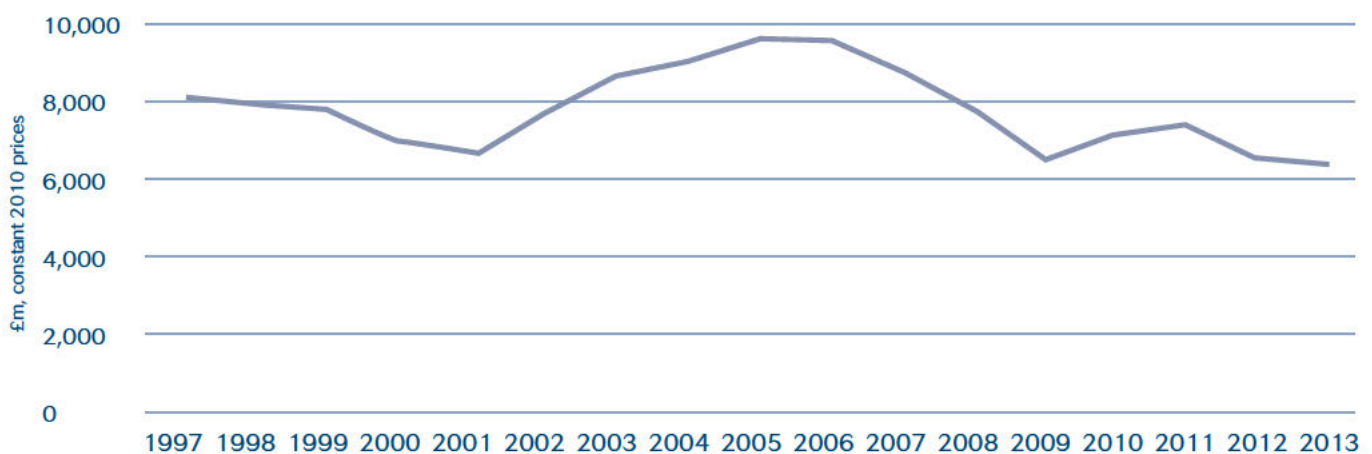
Construction output in the East Midlands fell for the second consecutive year in 2013. At £6.35bn in 2010 prices it was 34% below its 2005 peak.

Only the private housing and commercial sectors managed any growth in that year. The former saw its

output increase by 24% year-on-year to £1.21bn, while the latter increased by 9% to £1.12bn.

The majority of sectors experienced a fall in output on a yearly basis. The infrastructure, public non-housing and industrial ones all fell at a double-digit rate on an annual basis. The public housing sector saw a more moderate decline at 8% to £192m.

Construction output 1997-2013 – East Midlands



Source: ONS

ref. CSN Explained, Section 3, Note 2

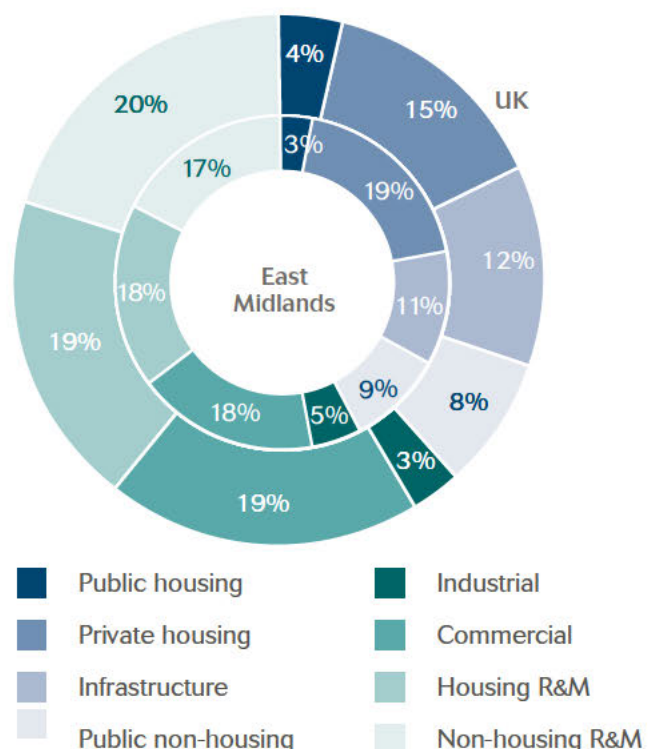
2.2 Industry structure

The diagram, Construction Industry structure 2013 – UK vs. East Midlands, illustrates the sector breakdown of construction in the East Midlands, compared to that in the UK. Effectively, the percentages for each sector illustrate what proportion of total output each sector accounts for.

The structure of the East Midlands construction industry is quite similar to that of the UK. New work's share of total output is slightly higher in the region than it is nationally, with respective proportions of 65% and 62%.

The main differences are a somewhat more important private housing sector in the East Midlands than the UK as a whole (19% vs 15%) and a proportionally smaller non-housing R&M sector (17% vs 20%).

Construction industry structure 2013 – UK vs East Midlands



Source: ONS, Experian

2.3 Economic overview

The expected performance of a regional or national economy over the forecast period (2015 – 2019) provides an indication of the construction sectors in which demand is likely to be strongest.

2.4 Economic structure

Gross value added (GVA) in the East Midlands totalled £78bn in 2010 prices in 2013, after edging upwards 0.5% year-on-year. At this level it was only 3% below its 2007 peak.

The region's industrial structure shows some variations when compared to the UK. Manufacturing remains a prominent feature of regional GVA and, while its importance has decreased over the last ten years

(18% to 16%), its relative decline has been far less severe than many other regions and devolved nations. The region also has a much lower dependence on finance and insurance, with its share falling over the last ten years from 5% to 4%. The information and communication sector is also less prominent, making

up about 3% of regional GVA, compared with over 6% for the UK as a whole. Professional and other private services saw the strongest growth, increasing at an average rate of close to 2% over the past decade. Public services have also been creeping upwards increasing their share from 19% to 20%.

Economic structure – East Midlands (£ billion, 2010 prices)

Selected sectors	Actual	Forecast					
		Annual % change, real terms					
	2013	2014	2015	2016	2017	2018	2019
Public services	16.0	-0.2	0.2	-0.1	-0.2	0.4	1.3
Professional and other private services	17.3	7.1	3.8	3.4	3.4	3.1	2.8
Manufacturing	12.8	4.3	1.7	1.6	1.9	1.6	1.3
Wholesale and retail	11.5	3.5	3.3	2.8	2.7	2.6	2.5
Transport and storage	3.5	0.5	2.3	2.5	2.5	2.5	2.4
Total Gross Value Added (GVA)	78.0	2.9	2.5	2.2	2.2	2.2	2.2

Note: Top 5 sectors, excluding construction
Source: Experian
ref. CSN Explained, Section 3, Note 3

2.5 Forward looking economic indicators

The region's economy is estimated to have expanded by 2.9% in 2014, a much stronger rise than that seen in 2013. It should continue to grow at an annual average rate of 2.3% over the forecast period, slightly below the UK as a whole (2.4%).

Most of the largest sectors – professional and other private services (3.3%), wholesale and retail (2.8%) and manufacturing (1.6%) – are projected to achieve solid growth in the five years to 2019. The exception is public services which is forecast marginal annual average growth of 0.3% over the same period. However, this should be enough to maintain its position as the second largest sector.

Real household disposable income (RHDI) is estimated to have risen by 1.2% in 2014, after falling by 0.5% in the previous year. RHDI is expected to continue rising through the forecast period, at an annual average rate of 2%.

House prices on the Office of National Statistics' mix-adjusted house price series stood at £173,000 in 2013. They were up 2.3% year-on-year and slightly above their 2007 peak. In the third quarter of 2014,

prices were up 4.1% quarter-on-quarter and 8.4% on the same three months a year earlier.

The unemployment rate on the LFS measure fell for its second successive year in 2013. It is predicted to further fall in 2014 to 6.4%. We expect it to drop below 6% by the end of the forecast period.

2.6 New construction orders – overview

Orders increased for their second consecutive year in 2013. At £3.42bn they were up 19% year-on-year, but they remained 41% below their 2005 peak.

Private housing and industrial construction both saw the sharpest increases on an annual basis. Orders in the former almost doubled to £1.33bn, while they increased by 80% in the latter to £377m.

The public non-housing sector saw new orders return to growth in 2013 after three consecutive annual declines. At £548m they were up 21% year-on-year, yet they remained at approximately only half of their 2004 level.

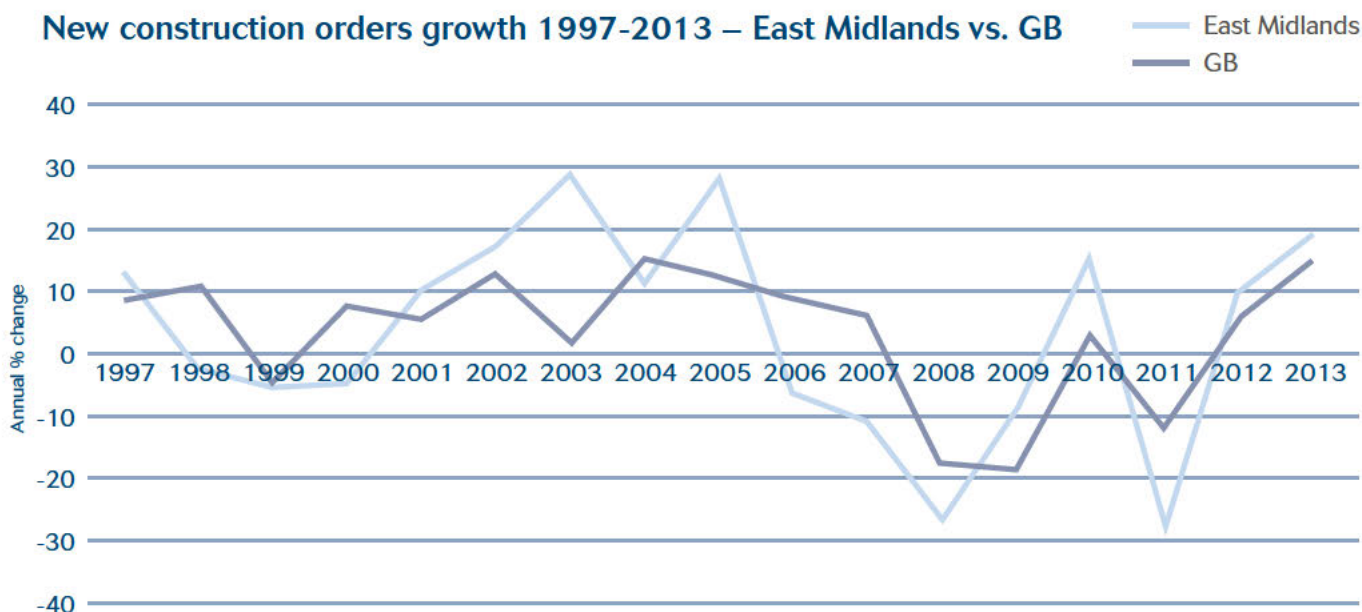
Both the public housing and commercial sectors experienced a decline in orders. The former edged downwards to £120m, while the latter saw a double-digit decline to £545m, their lowest total since 1994.

Economic indicators – East Midlands (£ billion, 2010 prices – unless otherwise stated)

	Actual	Forecast					
		Annual % change, real terms					
	2013	2014	2015	2016	2017	2018	2019
Real household disposable income	65.8	1.2	1.9	1.2	2.2	2.6	2.3
Household spending	67.2	1.5	2.1	1.9	1.9	2.1	2.2
Working age population (000s and as % of all)	2,813	61.45%	61.72%	61.82%	61.67%	61.49%	61.48%
House prices (£)	173,182	6.90	6.24	4.22	3.06	3.11	3.27
LFS unemployment (millions)	0.17	-12.70	-3.20	0.31	0.81	0.00	0.60

Source: ONS, DCLG, Experian

New construction orders growth 1997-2013 – East Midlands vs. GB



Source: ONS
ref. CSN Explained, Section 3, Note 4

2.7 New construction orders – current situation

In the first half of 2014 new construction orders stood at £1.44bn. They were down 24% on the previous six months' total, and also down 5% on the same period of 2013.

Industrial orders saw the largest increase on an annual basis. At £153m they had better than doubled their level on the same period a year earlier. Commercial orders also grew strongly year-on-year with an increase of 29% to £256m.

In contrast, the public housing, private housing and public non-housing sectors all saw their orders contract six-months on six-months, as well as on the corresponding period of 2013.

While infrastructure orders had risen 2% to £208m on a half-yearly basis, they were down 30% from a year earlier.

2.8 Construction output – short-term forecasts (2015–2016)

Regional Office for National Statistics (ONS) output statistics are published in current prices and are thus inclusive of any inflationary effect. At the time of writing, regional ONS construction output statistics were only available for the first two quarters of 2014.

Output in the first half of 2014 totalled £3.66bn, 1% down on its total for the preceding six months, but up 14% when compared to the same period of 2013.

The private housing and industrial construction sectors were the only ones to make gains on both measures. The former was up 20% and 77% to reach £915m. The latter rose 15% and 55% on the same measures to total £221m.

The commercial sector experienced a more mixed performance. At £580m output had fallen 13% on a half-yearly basis, yet it remained 2% above its level for the same period of 2013.

New work construction orders – East Midlands (£ million, current prices)

	Actual	Annual % change				
		2013	2009	2010	2011	2012
Public housing	120	5.2	-20.2	-9.2	5.1	-3.2
Private housing	1326	-41.3	108.4	-26.5	19.6	95.6
Infrastructure	499	55.9	52.8	-64.3	116.5	-34.3
Public non-housing	548	12.7	-22.3	-12.8	-30.6	20.7
Industrial	377	-28.7	-19.5	40.0	-28.9	80.4
Commercial	545	-28.6	6.0	-22.2	1.7	-15.1
Total new work	3,415	-9.3	15.5	-28.5	9.7	19.1

Source: ONS
ref. CSN Explained, Section 3, Note 4

Construction output – East Midlands (£ million, 2011 prices)

	Actual 2013	Forecast annual % change			Annual average 2015-2016
		2014	2015	2016	
Public housing	192	-1%	-6%	-3%	-4.1%
Private housing	1,213	32%	20%	4%	11.8%
Infrastructure	696	-11%	-4%	0%	-1.9%
Public non-housing	592	-8%	3%	5%	4.2%
Industrial	305	32%	8%	5%	6.2%
Commercial	1,122	-6%	-9%	1%	-4.0%
New work	4,120	7%	6%	3%	4.2%
Housing R&M	1,140	6%	-1%	-1%	-1.0%
Non-housing R&M	1,094	7%	2%	2%	2.1%
Total R&M	2,234	6%	1%	0%	0.6%
Total work	6,354	7%	4%	2%	2.9%

Source: Experian
ref. CSN Explained, Section 3, Notes 1 and 2

The public housing (£83m), infrastructure (£289m) and public non-housing (£281m) sectors all saw output fall on both a six-monthly and annual basis.

Total output for the East Midlands is expected to increase by 4% in 2015 and 2% in the following year, giving an average annual growth rate of 2.9% in the short term.

Expansion in activity is expected to be strongest in the private housing and industrial sectors, with respective growth rates of 11.8% and 6.2%. The positive effect of 'Help to Buy' is helping to bring forward new projects, such as the £150m scheme to build 2,000 new homes in Daventry, which should support solid output growth in the former. Growth in the latter sector should be driven by strengthening new orders figures,

as well as a good number of medium-sized warehouse developments which are due to start on-site within that period.

The public non-housing sector should also expand at a robust annual average rate (4.2%), with the upswing in activity coinciding with the start of work on Northampton University's new 'Waterside' campus.

The infrastructure, commercial and public housing sectors are expected to contract on an annual average basis in the short-term, by 1.9%, 4% and 4.1% respectively. Although, the outlook for infrastructure activity could change significantly if the start of work on the Willington C power station conversion goes ahead as scheduled in 2016.

Annual average construction output growth 2015-2016 – East Midlands



Source: Experian
ref. CSN Explained, Section 3, Note 2

2.9 Construction output – long-term forecasts (2015–2019)

Annual average output growth is projected at 2.2% between 2015 and 2019, lower than the equivalent UK rate of 2.9%. New work output is expected to expand at a much faster pace than R&M over the period, with respective growth rates of 3.1% and 0.5%.

Private housing output should see the sharpest increase, at a predicted annual average rate of 6.1%. The bulk of the expansion is expected to take place in the first half of the forecast period, before growth moderates significantly in 2016. By 2019, output in the sector should be within touching distance of its 2006 peak. The recent changes to Stamp Duty and on-going schemes like ‘Help to Buy’ should support strong short-term growth. The Governor of the Bank of England’s forward guidance policy has already indicated that any increases in interest rates will only occur at a very gradual rate. With recent inflation (CPI measure) figures remaining well below their 2% target, there remains little pressure to increase rates in the short-term.

The industrial and public non-housing sectors are next in-line with robust growth forecasts of 2.6% and 2.5% a year on average in the five years to 2019.

Work should begin in early 2015 on a new storage and distribution centre in Northamptonshire. The £77m project will require the demolition of a number of buildings on site, to be replaced by a single 93,000 square foot building. The B8 facility will be for storage and distribution. Work on-site is expected to finish before the end of 2015. Work is believed to have started on a storage and distribution centre in Derbyshire and should last for two years.

Infrastructure output is also set for decent growth, with an annual average expansion of 2.4%, although it will remain well below its 2012 peak in 2019.

Construction work should begin in 2015 on a new flood defence scheme in Derby. The £100m project would require the demolition of some council dwellings and a number of other buildings. The bulk of work would occur along the banks of the river Derwent, with the installation of retractable barriers. Work on site is expected to last four years.

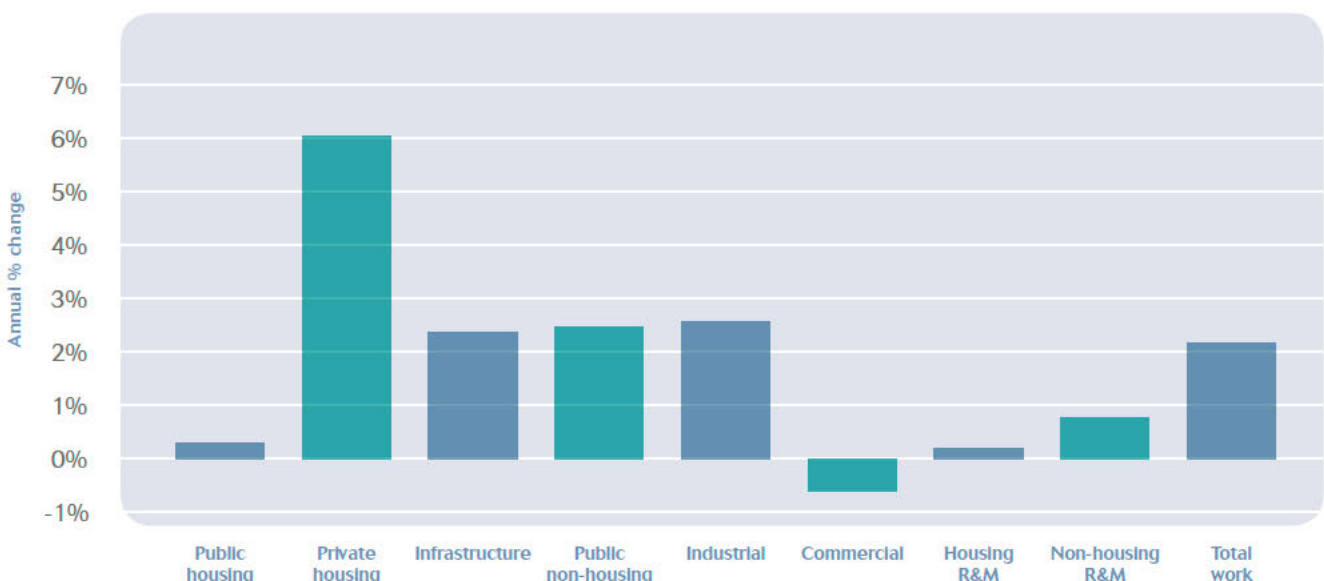
Performance is set to be far less positive for both the public housing and commercial sectors. The former should remain largely flat with annual average growth of 0.3%, while the latter is the only new work sector expected to contract, albeit modestly (0.6%) on an annual average basis between 2015 and 2019. It’s worth noting that the falls in output will predominantly be in the early part of the forecast period, before growth returns in 2016.

2.10 Beyond 2019

The Government pipeline of new work is rather scant moving beyond 2019, although there are a few projects which are expected to start in the forecast period and carry on beyond it according to the national infrastructure pipeline. The conversion of Willington C power station is one such scheme. There are also a good number of offshore wind projects, although it’s difficult to quantify the exact proportion which could be attributed to infrastructure construction output for the region.

Recent outlines in the 2014 Autumn Statement detailed plans to better integrate the South East and North of England. Most, if not all of these plans would fall under the infrastructure sector. It’s difficult to derive what the actual value may be for regional output, but any effect would only be positive.

Annual average construction output growth 2015-2019 – East Midlands



Source: CSN, Experian ref. CSN Explained, Section 3, Note 2

Construction output – East Midlands (£ million, 2011 prices)

	Estimate 2014	Forecast annual % change					Annual average 2015-2019
		2015	2016	2017	2018	2019	
Public housing	190	-6%	-3%	3%	6%	1%	0.3%
Private housing	1,597	20%	4%	2%	4%	2%	6.1%
Infrastructure	620	-4%	0%	13%	2%	2%	2.4%
Public non-housing	546	3%	5%	0%	2%	2%	2.5%
Industrial	403	8%	5%	0%	-3%	4%	2.6%
Commercial	1,054	-9%	1%	1%	3%	1%	-0.6%
New work	4,410	6%	3%	3%	3%	2%	3.1%
Housing R&M	1,204	-1%	-1%	1%	1%	1%	0.2%
Non-housing R&M	1,175	2%	2%	1%	-1%	0%	0.8%
R&M	2,379	1%	0%	1%	0%	1%	0.5%
Total work	6,788	4%	2%	2%	2%	2%	2.2%

Source: CSN, Experian
ref. CSN Explained, Section 3, Note 2



3 Construction employment forecasts for the East Midlands

3.1 Total construction employment forecasts by occupation

The table presents actual construction employment (SICs 41-43, 71.1, and 74.9) in the East Midlands for 2013, the estimated total employment across 28 occupational categories in 2014 and forecasts for the industry for 2015 to 2019. A full breakdown of occupational groups is provided in Section 5 of CSN Explained.

Construction employment in the East Midlands is set to total around 173,000 in 2019, after expanding at an annual average rate of 1.1% over the forecast period.

This is below the UK average rate of 1.5% over the same period. Employment in the region in 2019 is expected to remain around 4% below its 2008 peak. Of the 28 occupational aggregates 19 are expected to post growth over the forecast period. While this is the majority the proportion which aren't expected to grow is somewhat higher than in some other regions and devolved nations. Nevertheless, of those which are expecting growth civil engineering should lead the way with an annual average expansion of 4.2%. Employment growth for surveyors (3.6%), other construction professionals (3.3%) and construction trade supervisors (2.8%) should follow.

Total employment by occupation – East Midlands

	Actual 2013	Estimate 2014	Forecast 2015	Forecast 2019
Senior, executive, and business process managers	10,930	11,040	11,240	11,650
Construction project managers	2,330	2,430	2,510	2,740
Other construction process managers	13,090	13,630	14,110	15,390
Non-construction professional, technical, IT and other office-based staff	21,380	21,900	22,520	23,730
Construction trades supervisors	1,560	1,630	1,690	1,880
Wood trades and interior fit-out	14,700	14,900	15,070	14,690
Bricklayers	3,660	3,690	3,720	3,590
Building envelope specialists	8,250	8,300	8,350	8,070
Painters and decorators	6,010	6,030	6,090	6,090
Plasterers	4,610	4,960	5,180	5,330
Roofers	1,690	1,740	1,790	1,810
Floorers	1,620	1,630	1,640	1,580
Glaziers	2,830	2,930	3,020	3,220
Specialist building operatives nec*	6,410	6,410	6,460	6,530
Scaffolders	430	520	450	510
Plant operatives	3,330	3,390	3,440	3,260
Plant mechanics/fitters	3,670	3,760	3,880	4,290
Steel erectors/structural fabrication	1,530	1,570	1,600	1,600
Labourers nec*	6,580	6,800	6,980	7,180
Electrical trades and installation	13,610	13,710	13,870	14,040
Plumbing and HVAC Trades	9,030	9,020	9,070	9,220
Logistics	1,130	1,110	1,090	980
Civil engineering operatives nec*	2,110	2,120	2,140	2,130
Non-construction operatives	2,600	2,580	2,560	2,280
Civil engineers	3,510	3,720	3,930	4,570
Other construction professionals and technical staff	8,410	8,810	9,190	10,360
Architects	570	570	570	520
Surveyors	4,780	5,090	5,350	6,080
Total (SIC 41-43)	143,090	145,800	148,470	151,790
Total (SIC 41-43, 71.1, 74.9)	160,360	163,990	167,510	173,320

Source: ONS, CSN, Experian
ref. CSN Explained, Section 3, Notes 5, 6 and 8

3.2 Annual recruitment requirements (ARR) by occupation

The ARR is a gross requirement that takes into account workforce flows into and out of construction, due to factors such as movements between industries, migration, sickness, and retirement. However, these flows do not include movements into the industry from training, due to the inconsistency and coverage of supply data. Thus, the annual recruitment requirement provides an indication of the number of new employees that would need to be recruited into construction each year in order to realise forecast output.

The East Midlands has a projected ARR of 3,120 over the forecast period. This represents 1.9% of base 2015 employment, which is slightly higher than the UK average of 1.7%. Of the 28 construction-specific occupational aggregates labourers nec. are expected to have the highest absolute requirement at 470. In terms of ratios of base 2015 employment, the requirement is highest for labourers nec., (6.7%), plasterers (4.8%), glaziers (4.6%) and specialist building operatives (3.9%) among the construction-specific occupations.

Please note that all of the ARRs presented in this section are employment requirements and not necessarily training requirements. This is because some new entrants to the construction industry, such as skilled migrants, or those from other industries where similar skills are already used, will be able to work in the industry without the need for significant retraining.

Non-construction operatives is a diverse occupational group including all of the activities under the SICs 41-43, 71.1, and 74.9 umbrella that cannot be classified elsewhere, such as cleaners, elementary security occupations nec. and routine inspectors and testers. The skills required in these occupations are highly transferable to other industries and forecasting such movement is hazardous given the lack of robust supportive data. Therefore the ARR for non-construction operatives is not published.

Finally, for certain occupations there will be no appreciable requirement over the forecast period, partly due to the recession creating a 'pool' of excess labour.

Annual recruitment requirement by occupation – East Midlands

	2015 - 2019
Senior, executive, and business process managers	180
Construction project managers	-
Other construction process managers	-
Non-construction professional, technical, IT and other office-based staff	1,640
Construction trades supervisors	60
Wood trades and interior fit-out	-
Bricklayers	-
Building envelope specialists	-
Painters and decorators	70
Plasterers	250
Roofers	-
Floorers	-
Glaziers	140
Specialist building operatives nec*	250
Scaffolders	<50
Plant operatives	-
Plant mechanics/fitters	-
Steel erectors/structural fabrication	-
Labourers nec*	470
Electrical trades and installation	-
Plumbing and HVAC Trades	-
Logistics	-
Civil engineering operatives nec*	-
Civil engineers	50
Other construction professionals and technical staff	-
Architects	-
Surveyors	-
Total (SIC 41-43)	3,070
Total (SIC 41-43, 71.1, 74.9)	3,120

Source: CSN, Experian
ref. CSN Explained, Section 3, Notes 7 and 8
*Not elsewhere classified

4 Comparisons across the UK

Despite ongoing delays to the nuclear new build programme, Wales is still projected to have the strongest output growth, despite the start on main construction works on Wylfa unlikely before the beginning of 2019. Nuclear new build still remains in the forecast period for the South West, where main construction works on Hinkley Point C should begin in 2015, helping to boost the region's annual average output growth rate to 3.6%.

Greater London slips in between Wales and the South West, with projected annual average output expansion of 4.2%, benefiting from very strong demand for housing, both public and private, despite recent indications that house prices in the capital are stabilising, and good growth in the commercial construction sector. Together, these three sectors accounted for 44% of London's construction output in 2013, well above the UK average (38%), and are thus proportionally providing a stronger driver for overall growth in the capital compared with elsewhere.

While most UK regions and nations are expected to experience quite strong growth in private housing output to 2016, with a slowdown to more sustainable levels thereafter, the prospects for public housing are much more uncertain as the current Affordable Housing Programme (AHP) winds down to April 2015. The overall pot of funding available from central Government for 2015-18 is much the same on an annualised basis as in 2011-15 and there are concerns that many housing associations may find increasing their borrowing levels from private sources more problematical in the future.

Outside of the South West, infrastructure growth is likely to be strongest in the North East and Wales, the former being driven by £400m of roads work in the Highways Agency's Area 14, which covers the region and the latter benefiting from Great Western Line electrification, road upgrades, energy works such as Swansea's tidal lagoon and, of course, nuclear new build at Wylfa in Anglesey.

Strongest growth in commercial construction is expected in Yorkshire and the Humber (annual average growth of 6.3%), the North West (6.3%), Wales (5.9%) and Greater London (5.7%). South Yorkshire in particular seems to be benefiting from the reactivation of retail-led projects mothballed during the 'great recession', while Wales is seeing an upsurge in conference and exhibition venue construction.

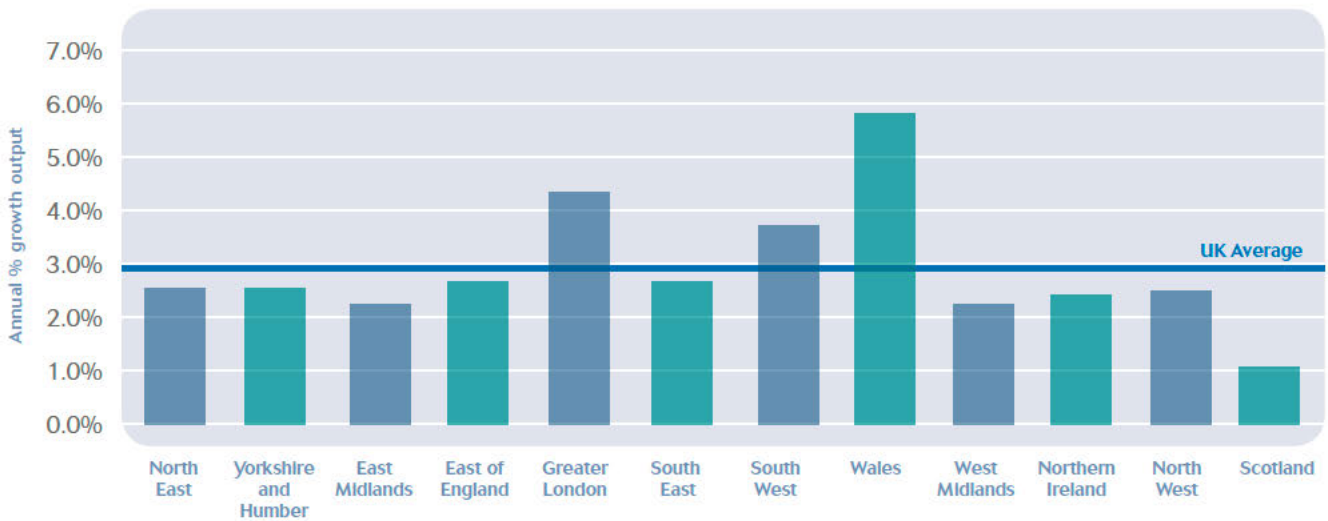
Annual average employment growth rates across the regions and nations tend to cluster within plus or minus half a percent of the UK average of 1.5%. The exceptions are Greater London and Wales (2.4%), and Scotland (0.1%). For Greater London, workforce demand is, in the main, driven by growth in the sectors mentioned above, but even in the infrastructure one, which is already at a historic high in output terms, further expansion is expected over the next five years. Employment demand in Wales inevitably benefits from the start of main works at Wylfa, despite the fact that infrastructure is less labour intensive than many other sectors. Wylfa is a very large project in a relatively small market. Scotland's relatively poor projected output growth rate (1.1% a year on average) is only just enough to drive marginal employment growth given anticipated productivity gains.

Despite London's strong employment demand, its annual recruitment requirement (ARR) only equates to around 0.5% of projected 2015 employment. This is because the region acts as a natural magnet for the construction workforce within the UK and beyond anyway. In contrast, Wales' strong employment demand is supplemented on the supply side by traditional employment outflows to other regions, especially the North West and South West, thus has a much higher ARR ratio, of 4.8%. Most other regions and nations have an ARR ratio of within a percentage point of the UK average (1.7%).



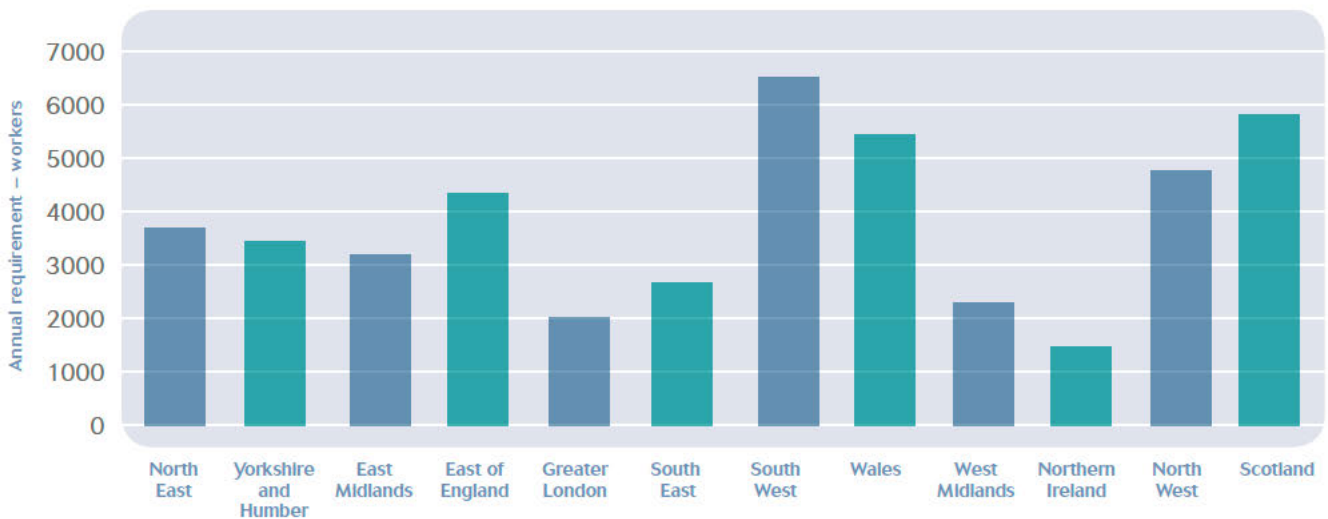
Employment growth is expected to average 1.1% over the forecast period, slightly below the UK average of 1.5%.

Annual average output growth by region 2015-2019



Source: CSN, Experian ref. CSN Explained, Section 3, Note 2

Annual recruitment requirement (ARR) by region 2015-2019



Source: CSN, Experian



CSN Explained

This appendix provides further details and clarification of some of the points covered in the report.

Section 1 gives an overview of the underpinning methods that are used by the CSN, working in partnership with Experian, to produce the suite of reports at a UK, national and regional level.

Section 2 provides a glossary to clarify some of the terms that are used in the reports.

Section 3 has some further notes relating to the data sources used for the various charts and tables. This section also outlines what is meant by the term 'footprint', when talking about the areas of responsibility that lie with a Sector Skills Council (SSC) or Sector Bodies.

Section 4 explains the sector definitions used within the report and provides examples of what is covered in each.

Section 5 gives a detailed breakdown of the 28 occupational groups into the individual standard occupational classification (SOC) codes that are aggregated to provide the employment and recruitment requirement.

Section 6 concludes this appendix by giving details about the range of LMI reports, the advantages of being a CSN member and details of who to contact if readers are interested in joining.



1. CSN Methodology

Background

The **Construction Skills Network** has been evolving since its conception in 2005, acting as vehicle for ConstructionSkills to collect and produce information on the future employment and training needs of the industry.

CITB, CIC and CITB-ConstructionSkills Northern Ireland are working as ConstructionSkills, the Sector Skills Council for Construction, to produce robust labour market intelligence which provides a foundation on which to plan for future skills needs and to target investment.

The CSN functions at both a national and regional level. It comprises a National Group, 12 Observatory groups, a forecasting model for each of the regions and countries, and a Technical Reference Group. An Observatory group currently operates in each of the nine English regions and also in Wales, Scotland and Northern Ireland.

Observatory groups currently meet twice a year and consist of key regional stakeholders invited from industry, Government, education, other SSCs and Sector Bodies, all of whom contribute their local industry knowledge and views on training, skills, recruitment, qualifications and policy. The National Group also includes representatives from industry, Government, education, other SSCs and Sector Bodies. This Group convenes twice a year and sets the national scene, effectively forming a backdrop for the Observatories.

At the heart of the CSN are several models which generate forecasts of employment requirements within the industry for a range of occupational groups. The models are designed and managed by Experian under the independent guidance and validation of the Technical Reference Group, which is comprised of statisticians and modelling experts.

The models have evolved over time and will continue to do so, to ensure that they account for new research as it is published as well as new and improved modelling techniques. Future changes to the model will only be made after consultation with the Technical Reference Group.

The model approach

The model approach relies on a combination of primary research and views from the CSN to facilitate it. National data is used as the basis for the assumptions that augment the models, which are then adjusted with the assistance of the Observatories and National Group. Each English region, Wales, Scotland and Northern Ireland has a separate model (although all models are interrelated due to labour movements) and, in addition, there is one national model that acts as a constraint to the individual models and enables best use to be made of the most robust data (which is available at the national level).

The models work by forecasting demand and supply of skilled workers separately. The difference between demand and supply forms the employment requirement. The forecast total employment levels are derived from expectations about construction output

and productivity. Essentially, this is based upon the question 'How many people will be needed to produce forecast output, given the assumptions made about productivity?'

The **annual recruitment requirement (ARR)** is a gross requirement that takes into account workforce flows into and out of construction, due to such factors as movements between industries, migration, sickness and retirement. However, these flows do not include movements into the industry from training, although robust data on training provision is being developed by CITB in partnership with public funding agencies, further education, higher education and employer representatives. Thus, the annual recruitment requirement provides an indication of the number of new employees that would need to be recruited into construction each year in order to realise forecast output.

Estimates of demand are based upon the results of discussion groups comprising industry experts, a view of construction output and integrated models relating to wider national and regional economic performance. The models are dynamic and reflect the general UK economic climate at any point in time. To generate the labour demand, the models use a set of specific statistics for each major type of work to determine the employment, by trade, needed to produce the predicted levels of construction output. The labour supply for each type of trade or profession is based upon the previous year's supply (the total stock of employment) combined with flows into and out of the labour market.

The key leakages (outflows) that need to be considered are:

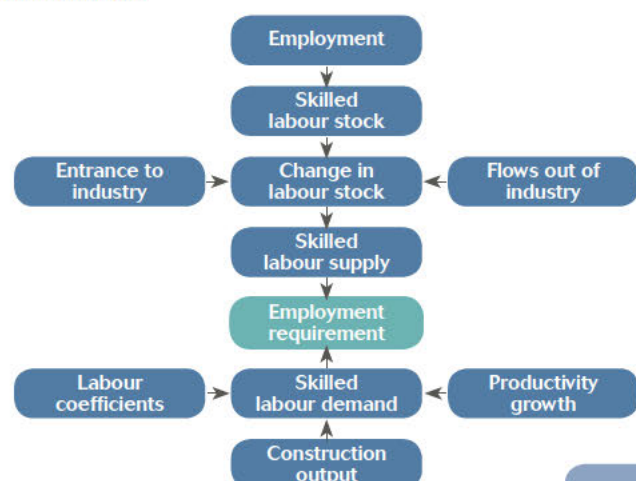
- Transfers to other industries
- International/domestic out migration
- Permanent retirements (including permanent sickness)
- Outflow to temporary sickness and home duties.

The main reason for outflow is likely to be transfer to other industries.

Flows into the labour market include:

- Transfers from other industries
- International/domestic immigration
- Inflow from temporary sickness and home duties.

The most significant inflow is likely to be from other industries. A summary of the model is shown in the flow chart below.



2. Glossary of terms

Building envelope specialists – any trade involved with the external cladding of a building other than bricklaying, e.g. curtain walling.

Demand – this is calculated using construction output data from the Office for National Statistics (ONS) and the Department of Finance and Personnel Northern Ireland (DFP), along with vacancy data from the National Employer Skills Survey, produced by the Department for Education and Skills. These data sets are translated into labour requirements by trade using a series of coefficients to produce figures for labour demand that relate to forecast output levels.

GDP (gross domestic product) – total market value of all final goods and services produced. A measure of national income. $GDP = GVA$ plus taxes on products minus subsidies on products.

GVA (gross value added) – total output minus the value of inputs used in the production process. GVA measures the contribution of the economy as a difference between gross output and intermediate outputs.

Coefficients – to generate the labour demand, the model makes use of a set of specific statistics for each major type of work, to determine employment by trade or profession, based upon the previous year's supply. In essence, this is the number of workers of each occupation or trade needed to produce £1m of output across each sub-sector.

LFS (Labour Force Survey) – a UK household sample survey which collects information on employment, unemployment, flows between sectors and training. Information is collected from around 53,000 households each quarter (the sample totals more than 100,000 people).

LMI (labour market intelligence) – data that is quantitative (numerical) or qualitative (insights and perceptions) on workers, employers, wages, conditions of work, etc.

Macroeconomics – the study of an economy at a national level, including total employment, investment, imports, exports, production and consumption.

Nec – not elsewhere classified, used as a reference in LFS data.

ONS (Office for National Statistics) – organisation producing official statistics on the economy, population and society at both a national and local level.

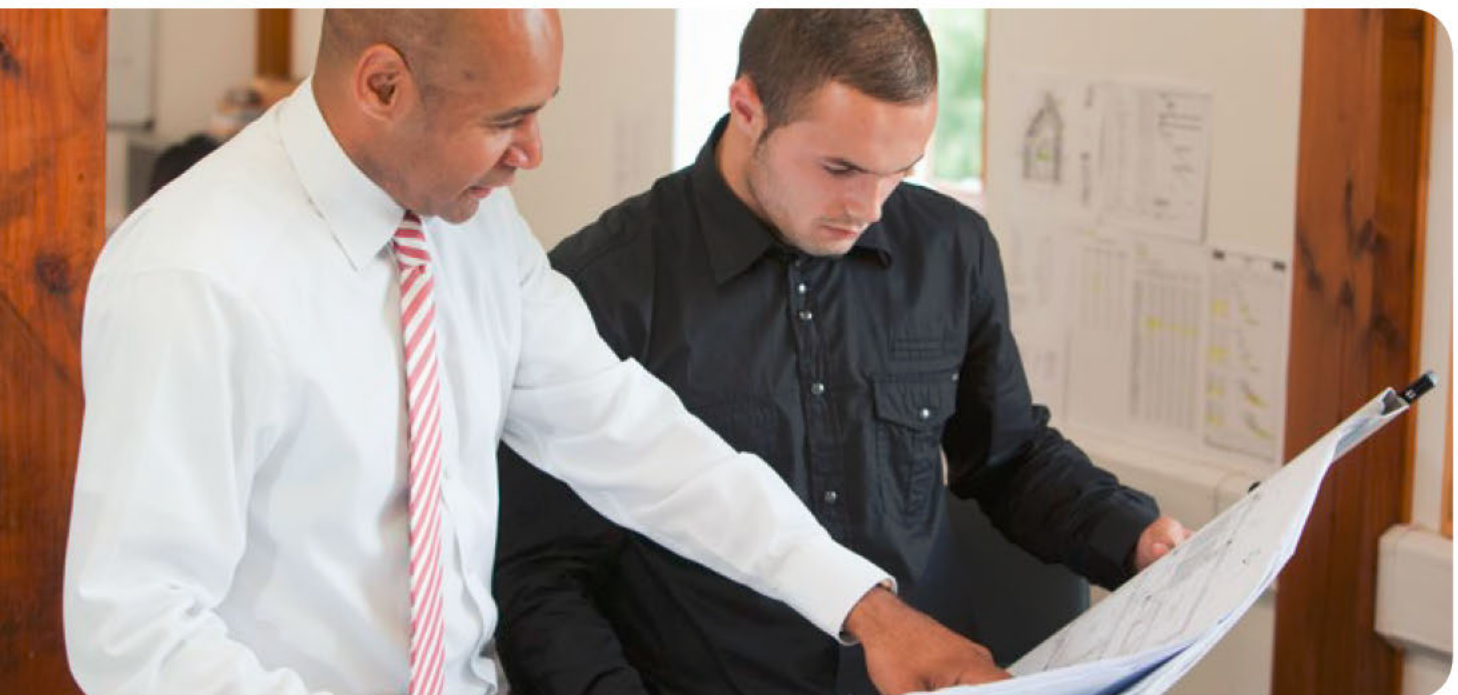
Output – total value of all goods and services produced in an economy.

Productivity – output per employee.

SIC codes (Standard Industrial Classification codes) – from the United Kingdom Standard Industrial Classification of Economic Activities produced by the ONS.

SOC codes (Standard Occupational Classification codes) – from the United Kingdom Standard Occupational Classification produced by the ONS.

Supply – the total stock of employment in a period of time, plus the flows into and out of the labour market. Supply is usually calculated from LFS data.



3. Notes and Footprints

Notes

- 1 Except for Northern Ireland, output data for the English regions, Scotland and Wales is supplied by the Office for National Statistics (ONS) on a current price basis. Thus, national deflators produced by the ONS have been used to deflate prices to a 2005 constant price basis, so that the effects of inflation have been stripped out.
- 2 The annual average growth rate of output is a compound average growth rate, i.e. the rate at which output would grow each year if it increased steadily over the forecast period.
- 3 Only selected components of gross value added (GVA) are shown in this table and so do not sum to the total.
- 4 For new construction orders, comparison is made with Great Britain rather than the UK, owing to the fact that there are no orders data series for Northern Ireland.
- 5 Employment numbers are rounded to the nearest 10.
- 6 The tables include data relating to plumbers and electricians. As part of SIC 43, plumbers and electricians working in contracting are an integral part of the construction process. However, it is recognised by ConstructionSkills that SummitSkills has responsibility for these occupations across a range of SIC codes, including SIC 43.2.
- 7 A reporting minimum of 50 is used for the annual recruitment requirement (ARR). As a result some region and devolved nation ARR forecasts do not sum to the total UK requirement.
- 8 The Employment and ARR tables show separate totals for SIC41-43 and SIC41-43, 71.1 and 74.9. The total for SIC41-43 covers the first 24 occupational groups on the relevant tables and excludes civil engineers, other construction professionals and technical staff, architects and surveyors. The total for SIC41-43, 71.1 and 74.9 includes all occupations.

Footprints for Built Environment Sector Bodies

ConstructionSkills is responsible for SIC 41 Construction of buildings, SIC 42 Civil engineering,

ConstructionSkills	
SIC Code	Description
41.1	Development of building projects
41.2	Construction of residential and non-residential buildings
42.1	Construction of roads and railways
42.2	Construction of utility projects
42.9	Construction of other civil engineering projects
43.1	Demolition and site preparation
43.3	Building completion and finishing
43.9	Other specialised construction activities nec
71.1*	Architectural and engineering activities and related technical consultancy

SIC 43 Specialised construction activities and SIC 71.1 Architectural and engineering activities and related technical consultancy.

The table below summarises the SIC codes (2007) covered by ConstructionSkills.

The sector footprints for the other Sector Bodies covering the Built Environment:

SummitSkills

Footprint – plumbing, heating, ventilation, air conditioning, refrigeration and electrotechnical.

Coverage – Building services engineering.

ConstructionSkills shares an interest with SummitSkills in SIC 43.21 Electrical installation and SIC 43.22 Plumbing, heat and air-conditioning installation. ConstructionSkills recognises the responsibility of Summit Skills across Standard Industrial Classifications (SIC) 43.21 and 43.22; thus data relating to the building services engineering sector is included here primarily for completeness.

The Building Futures Group

Footprint – property services, housing, facilities, management, cleaning.

Coverage – property, housing and land managers, chartered surveyors, estimators, valuers, home inspectors, estate agents and auctioneers (property and chattels), caretakers, mobile and machine Operatives, window cleaners, road sweepers, cleaners, domestics, facilities managers.

The Building Futures Group has a peripheral interest in SIC 71.1 Architectural and engineering activities and related technical consultancy.

Energy and Utility Skills

Footprint – electricity, gas (including gas installers), water and waste management.

Coverage – electricity generation and distribution, gas transmission, distribution and appliance installation and maintenance, water collection, purification and distribution, waste water collection and processing, waste management.

*The Building Futures Group has a peripheral interest in SIC 71.1

4. Definitions: types and examples of construction work

Public sector housing – local authorities and housing associations, new towns and Government departments

Housing schemes, care homes for the elderly and the provision within housing sites of roads and services for gas, water, electricity, sewage and drainage.

Private sector housing

All privately owned buildings for residential use, such as houses, flats and maisonettes, bungalows, cottages and the provision of services to new developments.

Infrastructure – public and private

Water

Reservoirs, purification plants, dams, water works, pumping stations, water mains, hydraulic works etc.

Sewerage

Sewage disposal works, laying of sewers and surface drains.

Electricity

Building and civil engineering work for electrical undertakings, such as power stations, dams and other works on hydroelectric schemes, onshore wind farms and decommissioning of nuclear power stations.

Gas, communications, air transport

Gas works, gas mains and gas storage; post offices, sorting offices, telephone exchanges, switching centres etc.; air terminals, runways, hangars, reception halls, radar installations.

Railways

Permanent way, tunnels, bridges, cuttings, stations, engine sheds etc., signalling and other control systems and electrification of both surface and underground railways.

Harbours

All works and buildings directly connected with harbours, wharves, docks, piers, jetties, canals and waterways, sea walls, embankments and water defences.

Roads

Roads, pavements, bridges, footpaths, lighting, tunnels, flyovers, fencing etc.

Public non-residential construction¹

Factories and warehouses

Publicly owned factories, warehouses, skill centres.

Oil, steel, coal

Now restricted to remedial works for public sector residual bodies.

Schools, colleges, universities

State schools and colleges (including technical colleges and institutes of agriculture); universities including halls of residence, research establishments etc.

Health

Hospitals including medical schools, clinics, welfare centres, adult training centres.

Offices

Local and central Government offices, including town halls, offices for all public bodies except the armed services, police headquarters.

Entertainment

Theatres, restaurants, public swimming baths, caravan sites at holiday resorts, works and buildings at sports grounds, stadiums, racecourses etc. owned by local authorities or other public bodies.

Garages

Buildings for storage, repair and maintenance of road vehicles, transport workshops, bus depots, road goods transport depots and car parks.

Shops

Municipal shopping developments for which the contract has been let by a Local Authority.

Agriculture

Buildings and work on publicly financed horticultural establishments; fen drainage and agricultural drainage, veterinary clinics.

Miscellaneous

All work not clearly covered by any other headings, such as fire stations, police stations, prisons, reformatories, remand homes, civil defence work, UK Atomic Energy Authority work, council depots, museums, libraries.

Private industrial work

Factories, warehouses, wholesale depots, all other works and buildings for the purpose of industrial production or processing, oil refineries, pipelines and terminals, concrete fixed leg oil production platforms (not rigs); private steel work; all new coal mine construction such as sinking shafts, tunnelling, etc.

Private commercial work¹

Schools and universities

Schools and colleges in the private sector, financed wholly from private funds.

Health

Private hospitals, nursing homes, clinics.

Offices

Office buildings, banks.

Entertainment

Privately owned theatres, concert halls, cinemas, hotels, public houses, restaurants, cafés, holiday camps, swimming pools, works and buildings at sports grounds, stadiums and other places of sport or recreation, youth hostels.

Garages

Repair garages, petrol filling stations, bus depots, goods transport depots and any other works or buildings for the storage, repair or maintenance of road vehicles, car parks.

Shops

All buildings for retail distribution such as shops, department stores, retail markets, showrooms, etc.

Agriculture

All buildings and work on farms, horticultural establishments.

Miscellaneous

All work not clearly covered by any other heading, e.g. exhibitions, caravan sites, churches, church halls.

New work

New housing

Construction of new houses, flats, bungalows only.

All other types of work

All new construction work and all work that can be referred to as improvement, renovation or refurbishment and which adds to the value of the property.²

Repair and maintenance

Housing

Any conversion of, or extension to any existing dwelling and all other work such as improvement, renovation, refurbishment, planned maintenance and any other type of expenditure on repairs or maintenance.

All other sectors

Repair and maintenance work of all types, including planned and contractual maintenance.³

¹ Where contracts for the construction or improvement of non-residential buildings used for public service provision, such as hospitals, are awarded by private sector holders of contracts awarded under the Private Finance Initiative, the work is classified as 'private commercial'.

² Contractors reporting work may not always be aware of the distinction between improvement or renovation work and repair and maintenance work in the non-residential sectors.

³ Except where stated, mixed development schemes are classified to whichever sector provides the largest share of finance.

5. Occupational Groups

Occupational group

Description, SOC (2010) reference.

Senior, executive, and business process managers

Chief executives and senior officials	1115
Financial managers and directors	1131
Marketing and sales directors	1132
Purchasing managers and directors	1133
Human resource managers and directors	1135
Property, housing and estate managers	1251
Information technology and telecommunications directors	1136
Research and development managers	2150
Managers and directors in storage and warehousing	1162
Managers and proprietors in other services nec*	1259
Functional managers and directors nec*	1139
IT specialist managers	2133
IT project and programme managers	2134
Financial accounts managers	3538
Sales accounts and business development managers	3545

Construction project managers

Construction project managers and related professionals	2436
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Other construction process managers

Production managers and directors in manufacturing	1121
Production managers and directors in construction	1122
Managers and directors in transport and distribution	1161
Waste disposal and environmental services managers	1255
Health and safety officers	3567
Conservation and environmental associate professionals	3550

Non-construction professional, technical, IT, and other office-based staff (excl. managers)

IT operations technicians	3131
IT user support technicians	3132
Finance and investment analysts and advisers	3534
Taxation experts	3535
Financial and accounting technicians	3537
Vocational and industrial trainers and instructors	3563
Business and related associate professionals nec*	3539
Legal associate professionals	3520
Inspectors of standards and regulations	3565
Programmers and software development professionals	2136

Information technology and telecommunications professionals nec*	2139
Estate agents and auctioneers	3544
Solicitors	2413
Legal professionals nec*	2419
Chartered and certified accountants	2421
Business and financial project management professionals	2424
Management consultants and business analysts	2423
Receptionists	4216
Typists and related keyboard occupations	4217
Business sales executives	3542
Book-keepers, payroll managers and wages clerks	4122
Records clerks and assistants	4131
Stock control clerks and assistants	4133
Telephonists	7213
Communication operators	7214
Personal assistants and other secretaries	4215
Sales and retail assistants	7111
Telephone salespersons	7113
Buyers and procurement officers	3541
Human resources and industrial relations officers	3562
Credit controllers	4121
Company secretaries	4214
Sales related occupations nec*	7129
Call and contact centre occupations	7211
Customer service occupations nec*	7219
Elementary administration occupations nec*	9219
Chemical scientists	2111
Biological scientists and biochemists	2112
Physical scientists	2113
Laboratory technicians	3111
Graphic designers	3421
Environmental health professionals	2463
IT business analysts, architects and systems designers	2135
Conservation professionals	2141
Environment professionals	2142
Actuaries, economists and statisticians	2425
Business and related research professionals	2426
Finance officers	4124
Financial administrative occupations nec*	4129
Human resources administrative occupations	4138
Sales administrators	4151
Other administrative occupations nec*	4159
Office supervisors	4162
Sales supervisors	7130
Customer service managers and supervisors	7220
Office managers	4161

Construction trades supervisors

Skilled metal, electrical and electronic trades supervisors	5250
Construction and building trades supervisors	5330

Wood trades and interior fit-out

Carpenters and joiners	5315
Paper and wood machine operatives	8121
Furniture makers and other craft woodworkers	5442
Construction and building trades nec* (25%)	5319

Bricklayers

Bricklayers and masons	5312
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Building envelope specialists

Construction and building trades nec* (50%)	5319
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Painters and decorators

Painters and decorators	5323
Construction and building trades nec* (5%)	5319

Plasterers

Plasterers	5321
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Roofers

Roofers, roof tilers and slaters	5313
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Floorers

Floorers and wall tilers	5322
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Glaziers

Glaziers, window fabricators and fitters	5316
Construction and building trades nec* (5%)	5319

Specialist building operatives not elsewhere classified (nec*)

Construction operatives nec* (100%),	8149
Construction and building trades nec* (5%)	5319
Industrial cleaning process occupations	9132
Other skilled trades nec*	5449

Scaffolders

Scaffolders, staggers and riggers	8141
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Plant operatives

Crane drivers	8221
Plant and machine operatives nec*	8129
Fork-lift truck drivers	8222
Mobile machine drivers and operatives nec*	8229

Plant mechanics/fitters

Metal working production and maintenance fitters	5223
Precision instrument makers and repairers	5224
Vehicle technicians, mechanics and electricians	5231
Elementary process plant occupations nec*	9139
Tool makers, tool fitters and markers-out	5222
Vehicle body builders and repairers	5232

Steel erectors/structural fabrication

Steel erectors	5311
Welding trades	5215
Metal plate workers and riveters	5214
Construction and building trades nec* (5%)	5319
Smiths and forge workers	5211
Metal machining setters and setter-operators	5221

Labourers nec*

Elementary construction occupations (100%)	9120
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Electrical trades and installation

Electricians and electrical fitters	5241
Electrical and electronic trades nec*	5249
Telecommunications engineers	5242

Plumbing and heating, ventilation, and air conditioning trades

Plumbers and heating and ventilating engineers	5314
Pipe fitters	5216
Construction and building trades nec* (5%)	5319
Air-conditioning and refrigeration engineers	5225

Logistics

Large goods vehicle drivers	8211
Van drivers	8212
Elementary storage occupations	9260
Buyers and purchasing officers (50%)	3541
Transport and distribution clerks and assistants	4134

Civil engineering operatives not elsewhere classified (nec*)

Road construction operatives	8142
Rail construction and maintenance operatives	8143
Quarry workers and related operatives	8123

Non-construction operatives

Metal making and treating process operatives	8117
Process operatives nec*	8119
Metal working machine operatives	8125
Water and sewerage plant operatives	8126
Assemblers (vehicles and metal goods)	8132
Routine inspectors and testers	8133
Assemblers and routine operatives nec*	8139
Elementary security occupations nec*	9249
Cleaners and domestics*	9233
Street cleaners*	9232
Gardeners and landscape gardeners	5113
Caretakers	6232
Security guards and related occupations	9241
Protective service associate professionals nec*	3319

*Not elsewhere classified

Civil engineers

Civil engineers 2121

Other construction professionals and technical staff

Mechanical engineers 2122

Electrical engineers 2123

Design and development engineers 2126

Production and process engineers 2127

Quality control and planning engineers 2461

Engineering professionals nec* 2129

Electrical and electronics technicians 3112

Engineering technicians 3113

Building and civil engineering technicians 3114

Science, engineering and production technicians nec* 3119

Architectural and town planning technicians 3121

Draughtspersons 3122

Quality assurance technicians 3115

Town planning officers 2432

Electronics engineers 2124

Chartered architectural technologists 2435

Estimators, valuers and assessors 3531

Planning, process and production technicians 3116

Architects

Architects 2431

Surveyors

Quantity surveyors 2433

Chartered surveyors 2434



6. CSN Website and contact details

The CSN website

citb.co.uk/csn

The CSN website functions as a public gateway for people wishing to access the range of labour market intelligence (LMI) reports and research material regularly produced by the CSN.

The main UK report, along with the twelve LMI reports (one for Northern Ireland, Scotland, Wales and each of the nine English regions) can be downloaded from the site, while other CITB research reports are also freely available on the CITB website. Having access to this range of labour market intelligence and trend insight allows industry, Government, regional agencies and key stakeholders to:

- Pinpoint the associated specific, skills that will be needed year by year
- Identify the sectors which are likely to be the strongest drivers of output growth in each region and devolved nation
- Track the macro economy
- Understand how economic events impact on regional and devolved nations' economic performance
- Highlight trends across the industry such as national and regional shifts in demand
- Plan ahead and address the skills needs of a traditionally mobile workforce
- Understand the levels of qualified and competent new entrants required to enter the workforce.

The website also contains information about:

- How the CSN functions
- The CSN model approach
- How the model can be used to explore scenarios
- CSN team contact information
- Access to related CITB research
- Details for those interested in becoming members of the network.

While the public area of the CSN Website is the gateway to the completed LMI and research reports, being a member of the CSN offers further benefits.

As a CSN member you will be linked to one of the Observatory groups that play a vital role in feeding back observations, knowledge and insight into what is really happening on the ground in every UK region and nation. This feedback is used to fine tune the assumptions and data that goes into the forecasting programme such as:

- Details of specific projects
- Demand within various types of work or sectors
- Labour supply
- Inflows and outflows across the regions and devolved nations.

CSN members therefore have:

- Early access to forecasts
- The opportunity to influence and inform the data
- The ability to request scenarios that could address 'What would happen if...?' types of questions using the model.

Through the members' area of the CSN website, members can:

- Access observatory related material such as meeting dates, agendas, presentations and notes
- Download additional research material
- Comment/feedback to the CSN team.

As the Observatory groups highlight the real issues faced by the industry in the UK, we can more efficiently and effectively plan our response to skills needs. If you would like to contribute your industry observations, knowledge and insight to this process and become a member of the CSN, we would be delighted to hear from you.

Contact details

For further information about the CSN website, enquiries relating to the work of the CSN, or to register your interest in becoming a member of the CSN, please contact us at: csn@citb.co.uk

For more information about the
Construction Skills Network, contact:

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CITB, CIC and CITB-ConstructionSkills Northern Ireland are working as ConstructionSkills, the Sector Skills Council for Construction. CITB is registered as a charity in England and Wales (Reg No 264289) and in Scotland (Reg No SC044875).