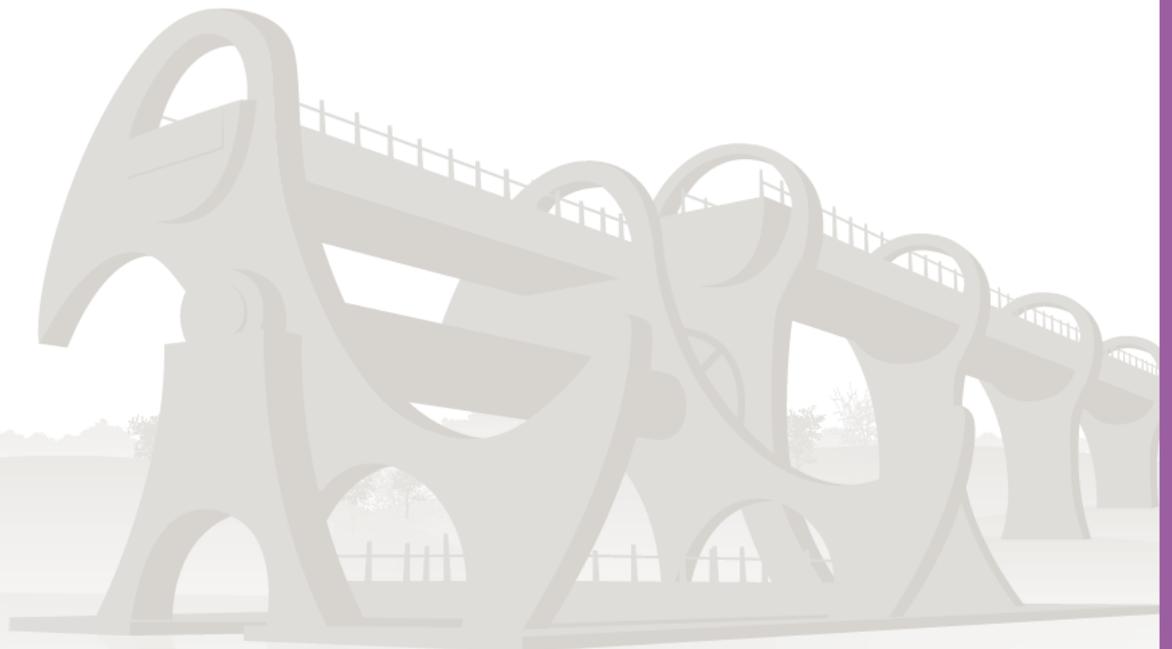


# INDUSTRY INSIGHTS

Construction Skills Network  
Forecasts 2016–2020

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**Scotland 2016–2020**



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## SECTION 1

# SUMMARY – SCOTLAND

# 0.5%

Construction output in Scotland is projected to expand by 0.5% a year on average in the five years to 2020, the lowest rate of growth of all the UK regions and devolved nations. Growth is expected to be focused in the repair and maintenance (R&M) sector (2.3%) with new work largely flat (-0.1%). Employment is forecast to decline by 0.7% a year on average, but this disguises a peak in 2016 before contraction sets in. Despite falling employment, net outflows from the industry will still mean that Scotland has a significant annual recruitment requirement (ARR), of 4,270, representing 1.9% of projected base 2016 employment.

### Key Findings

The Scottish construction industry will have experienced three good years of growth by the end of 2015, taking estimated output in the devolved nation up to £12.6bn in 2012 prices, a new high. The infrastructure sector has been a primary driver of this growth, with output in 2015 over two and a half times what it was in 2012. This rapid output growth has led to a very sharp rise in demand for construction trades, professionals and managers and this, combined with falling numbers entering training since the 'great' recession, has led to significant skills shortages across the industry in the short term.

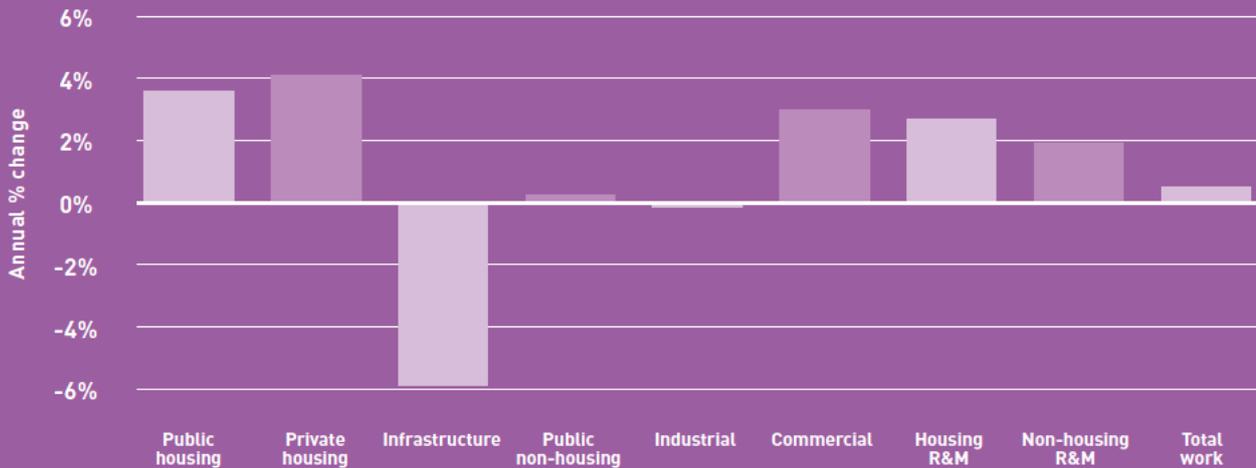
Construction output growth is expected to moderate sharply over the 2016 to 2020 period, to just 0.5% a year on average, as large projects complete in the infrastructure sector and activity falls sharply from its current very high levels. The sector is predicted to see an annual average decline in output of close to 6% in the five years to 2020 as work on the Queensferry Crossing, Aberdeen Western Peripheral Route and motorway upgrades complete and there is less work in the pipeline.

This long term view should not be interpreted as an overall weakness in the Scottish construction industry over the forecast period. Most other sectors are projected to grow and if infrastructure is removed from the figures expansion across the remaining sectors would be around 2.3% a year on average, not far off the UK rate of 2.5%.

The overall rate of output growth is not enough to drive expansion in employment, which is projected to decline by 0.7% a year on average in the five years to 2020. However, the long-term view disguises a peak in 2016 by which time employment will have grown by 6% in the three years since 2013. The falls in infrastructure output from 2016, given that the sector is currently accounting for over a quarter of construction output in Scotland, should release a significant percentage of the workforce to support activity in other, growing, sectors. Construction employment is expected to peak in 2016 at over 230,000 before slipping to around 219,000 in 2020.

Despite falling employment, Scotland will still have a significant ARR, of 4,270, representing 1.9% of base 2016 employment, slightly higher than the UK average of 1.7%. This is because of demographic trends that are accentuating the level of net outflows from the Scottish construction industry over the next five years.

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2016-2020 – SCOTLAND



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

## REGIONAL COMPARISON 2016-2020

Region	Annual average % change in output	Change in total employment	Total ARR
North East	1.5%	3,260	3,160
Yorkshire and Humber	2.4%	8,360	3,230
East Midlands	1.0%	1,210	3,110
East of England	2.3%	13,950	3,910
Greater London	3.5%	42,670	3,650
South East	0.9%	2,110	1,730
South West	4.4%	25,850	6,480
Wales	7.1%	17,490	5,440
West Midlands	1.7%	10,200	3,030
Northern Ireland	3.0%	4,660	1,760
North West	2.6%	22,430	6,650
Scotland	0.5%	-7,360	4,270
<b>UK</b>	<b>2.5%</b>	<b>144,830</b>	<b>46,420</b>

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

Construction output is projected to expand by 0.5% a year on average in the five years to 2020.



## SECTION 2

# THE OUTLOOK FOR CONSTRUCTION IN SCOTLAND

### 2.1 The outlook for construction in Scotland

Construction output in Scotland is estimated to have reached £11.2bn in 2012 prices in 2014, just 9% off its 2006 peak. This was the second consecutive annual increase in activity, driven in large part by an almost doubling of infrastructure work. However, infrastructure was not the only sector to see very good growth in 2014, with the industrial (41%), public non-housing (23%) and public housing (14%) sectors all posting double-digit rises. In fact the only two sectors estimated to have experienced declines in real terms in that year were the housing R&M (5%) and private commercial sectors (1%).

### 2.2 Industry structure

The diagram, Construction Industry Structure 2014 – UK vs. Scotland, illustrates the sector breakdown of construction in Scotland, compared to that in the UK. Effectively, the percentages for each sector illustrate what proportion of total output each sector accounts for.

The Scottish construction industry is more focused on new work with it accounting for 70% of output, compared with 62% in the UK as a whole in 2014. This means the R&M sectors, housing R&M in particular (13% vs 19%), are proportionally smaller in Scotland.

There are also some significant differences in importance within the new work arena, with private housing taking a much lower share of output in Scotland than the UK (12% vs 17%), and infrastructure taking a much larger share (21% vs 11%). Given the recent very strong growth in infrastructure activity, this comes as no surprise.

### 2.3 Economic overview

The expected performance of a regional or national economy over the forecast period (2016–2020) provides an indication of the construction sectors in which demand is likely to be strongest.

Gross value added (GVA) totalled £114.8bn in 2014 in 2012 prices, a 1.8% increase on the previous year, well below the 3% growth seen across the UK as a whole. The performance

across Scotland's main sectors was very mixed, with a 4.1% rise in wholesale and retail output and a 3.6% rise in professional and other private services, but falls in finance and insurance (1.9%) and public services (1.1%).

Total employment on the workforce jobs measure also grew slower in Scotland, at 2.5% in 2014 compared with 3.3% across the UK as a whole, although both are very strong annual growth rates. Nevertheless the unemployment rate was slightly lower (6.0% vs 6.2%).

### 2.4 Economic structure

The Scottish economy suffers from the same problem affecting all of the devolved nations and some of the English regions, especially in the north, and that is bigger public services and manufacturing sectors than the UK as a whole, although for Scotland the difference is not as pronounced as other areas. This factor was of less importance back in the boom years for public services in the early 2000s, but in the more constrained public finance environment of the present this means that this sector is likely to be less dynamic in growth terms.

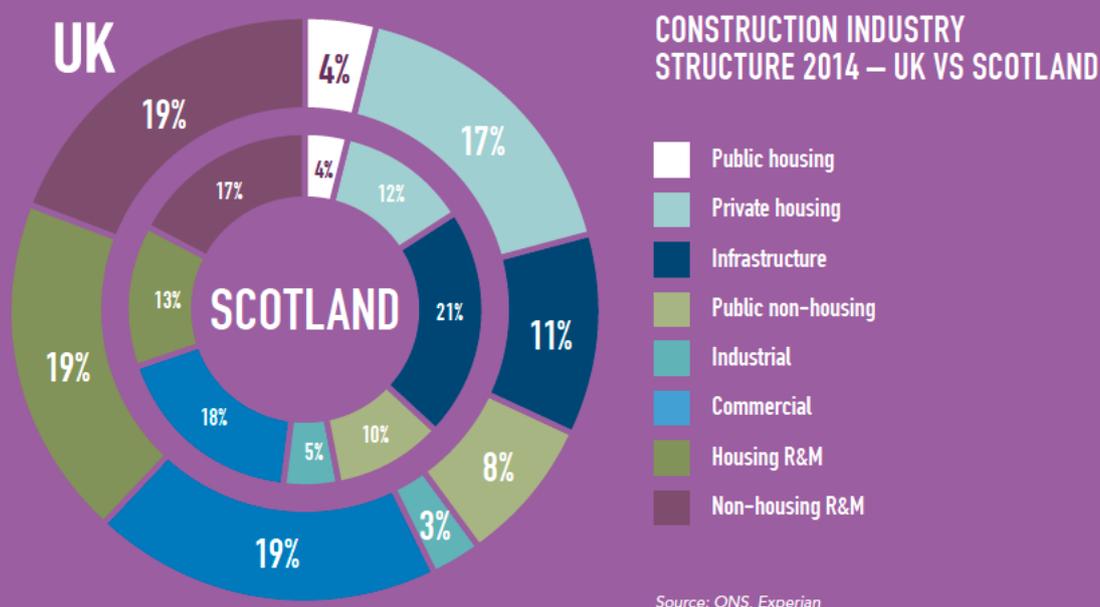
Public services accounted for 22% of GVA in Scotland in 2014, higher than the UK share of 18.6%, although its share is down by 2.5% since 2000. Professional and other private services is the largest sector in Scotland, as it is in the UK as a whole, but its share still lags by over 3% (23.4% Scotland vs 26.8% UK).

The somewhat different economic structure means that GVA per capita, household consumption per capita, and the employment rate are all a bit lower in Scotland than the UK as a whole.

## CONSTRUCTION OUTPUT 1998-2014 – SCOTLAND



Source: ONS. Ref: CSN Explained, Section 3, Note: 1



Source: ONS, Experian

## ECONOMIC STRUCTURE – SCOTLAND (£ BILLION, 2012 PRICES)

Selected sectors	Actual	Forecast					
		Annual % change, real terms					
	2014	2015	2016	2017	2018	2019	2020
Professional and other private services	26.9	2.3	2.6	3.0	2.9	2.6	2.4
Public services	25.2	-1.0	-0.8	-0.3	0.3	1.1	2.1
Wholesale and retail	12.3	2.5	1.1	1.8	1.9	2.0	2.1
Manufacturing	11.8	-1.8	0.3	2.4	2.4	1.4	1.0
Finance and insurance	8.7	-1.1	2.0	3.0	2.4	2.2	2.2
<b>Total Gross Value Added (GVA)</b>	<b>114.8</b>	<b>1.7</b>	<b>1.8</b>	<b>2.0</b>	<b>2.1</b>	<b>1.9</b>	<b>2.0</b>

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



## 2.5 Forward looking economic indicators

GVA growth in Scotland is estimated to have been 1.7% in 2015, again below the UK rate of 2.4% and this relative under-performance is expected to persist throughout the forecast period. Growth in the Scottish economy is likely to lag that in the UK by 0.4% a year on average over the forecast period.

The most dynamic sectors are expected to be mining and quarrying and information and communications both with projected annual average growth rates of 3%. However, these are small sectors, the former only accounting for 2.6% and the latter 3.4% of total GVA in Scotland. Of the big sectors, professional and other private services should see decent growth, of around 2.7% a year on average, but continuing austerity measures across the UK as a whole will constrain expansion in public services to about 0.5% a year.

Scotland also has a demographic problem looming in the long term. Fundamentally, the region has a reasonable industrial structure despite a large public sector and slight over-representation in manufacturing. However, its ageing population means that despite some very high participation rates and low unemployment rates Scotland simply may not have the people to fulfil jobs when they become available. Social care and pensions are also likely to come under pressure given the growing dependency ratio.

This picture is largely backed up by the latest Fraser of Allander Institute's report, which predicts a diverging gap between UK and Scottish performance. The Institute is also worried by poor export performance and weak productivity.



## 2.6 New construction orders – overview

Scotland has experienced very strong growth in its level of new construction orders over the three years to 2014, reaching £7.2bn (current prices), a new high and 85% up on their level in 2011. The main driver of this growth has been the huge uplift in infrastructure orders, which totalled nearly £2.6bn in 2014, over four times their level in 2011.

However, it would be wrong to say that growth has purely been infrastructure driven. 2014 was also a good year for new orders across all sectors except the public housing sector, where they fell by 13%.

## 2.7 New construction orders – current situation

The first two quarters of 2015 have not been nearly as buoyant as 2014. New orders totalled £3.4bn in that period, 1% up on the same period of 2014, but 13% lower than in the second half of that year. On a four-quarter moving total basis, new orders continued to rise in the first quarter of 2015, but fell by 3.6% in the second.

Comparison of the annualised totals in the second quarter of 2015 compared with the end of 2014 shows the level of new orders up by 7% and 11% respectively in the infrastructure and commercial sectors, but down in public housing (6%), private housing (8%), and the industrial sector (45%).

## 2.8 Construction output – short-term forecasts (2016–2017)

Regional Office for National Statistics (ONS) output statistics are published in current prices and are therefore inclusive of any inflationary effect. At the time of writing, regional ONS construction output statistics were only available for the first two quarters of 2015.

Construction output in Scotland reached £6.8bn (current prices) in the first half of 2015, over 6% higher than in the previous half-year and nearly 25% up on the corresponding period of 2014. On an annualised basis output has been rising for 10 quarters to the second quarter of last year.

Output for 2015 as a whole is likely to have been 13% up on 2014 in real terms, taking it to £12.6bn in 2012 prices, a new high. All sectors except for the industrial and non-housing R&M sectors are expected to have contributed to this growth, but the star performer yet again will have been infrastructure, with expansion in excess of 40%. The infrastructure sector is likely to have taken a 26% share of total Scottish construction output in 2015, double that of the UK as a whole.

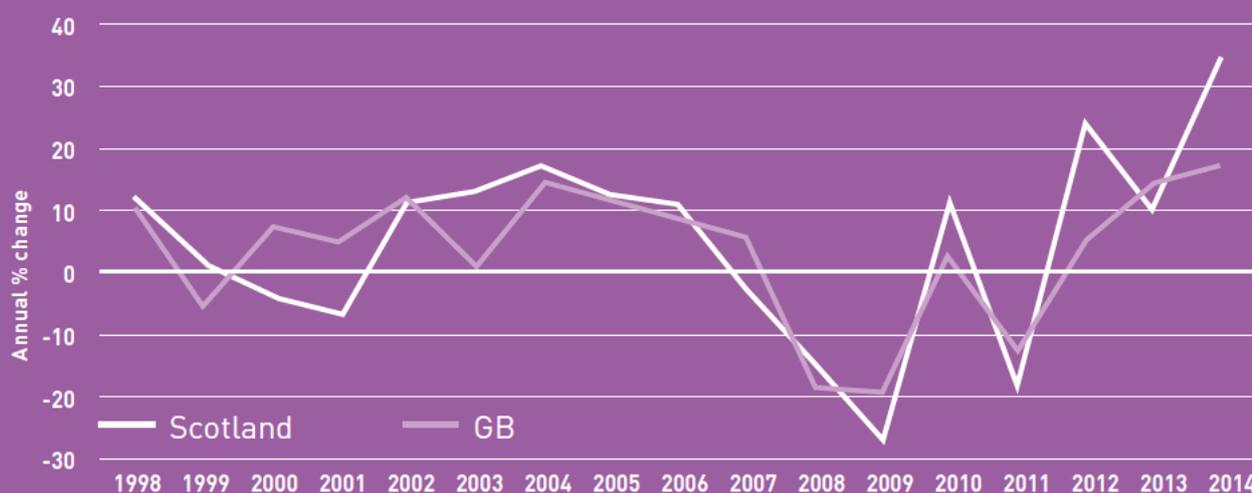
Annual average growth is projected to reach 1.3% a year on average in the short term (2016 and 2017), but this represents a considerable slowdown on recent performance. In both the shorter and medium term so much of what is projected to happen to Scottish construction will be driven by the infrastructure sector given its very large relative size.

## ECONOMIC INDICATORS – SCOTLAND (£ BILLION, CURRENT PRICES – UNLESS OTHERWISE STATED)

Selected sectors	Actual	Forecast Annual % change, real terms					
	2014	2015	2016	2017	2018	2019	2020
Real household disposable income	92.8	3.1	1.3	1.6	1.7	1.0	1.5
Household spending	88.0	2.3	1.8	2.0	1.9	1.9	1.9
Working age population (000s and as % of all)	3,384	63.6%	63.8%	63.8%	63.6%	63.7%	64.0%
House prices (£)	191,000	5.3	3.0	3.7	2.7	2.6	3.2
LFS unemployment (millions)	0.20	-6.0	-11.9	-1.3	0.0	0.3	0.2

Source: ONS, DCLG, Experian

## NEW CONSTRUCTION ORDERS GROWTH 1998-2014 – SCOTLAND VS. GB



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

## NEW WORK CONSTRUCTION ORDERS – SCOTLAND (£ MILLION, CURRENT PRICES)

	Actual	Annual % change				
	2014	2010	2011	2012	2013	2014
Public housing	235	29.4	-31.7	-13.3	-9.4	-13.3
Private housing	1,096	7.8	27.7	-16.6	1.8	31.3
Infrastructure	2,591	13.2	-27.1	138.9	5.7	60.3
Public non-housing	1,347	15.4	-42.5	-6.1	49.5	24.6
Industrial	450	47.1	-11.1	26.0	2.1	18.1
Commercial	1,467	-6.5	-10.2	26.3	4.6	30.9
<b>Total new work</b>	<b>7,186</b>	<b>11.6</b>	<b>-18.6</b>	<b>24.0</b>	<b>10.2</b>	<b>35.4</b>

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



There are a number of large projects due to complete in the infrastructure sector in 2016 and 2017, therefore we expect output levels to subside as the pipeline of new work looks much slimmer. According to the June 2015 edition of the National Infrastructure Plan (NIP) pipeline, investment in Scottish infrastructure is projected to rise from £3.1bn (2013/14 prices) in 2014/15 to £3.4bn in 2015/16 before subsiding to £2.8bn in 2017/18. However, the NIP omits a number of projects entirely funded by the Scottish Government, such as the Queensferry Crossing, due to complete next year, the Aberdeen Western Peripheral Route, due for completion in 2018, the M8/M73/M74 upgrades, due for completion in 2017, and the A9 dualling project. Once these are included, then growth in 2015/16 would be stronger and the fall to 2017/18 would be a little weaker. Respondents to the latest CECA survey reported a slow start to Scottish Water's SR15 programme, covering the period 2015 to 2021. Capital investment over the period is projected to total around £3.5bn, with annual expenditure expected to rise from £564m in 2015/16 to £579m in 2016/17 and £595m in 2017/18.

Given the level of output already recorded so far in 2015, the outturn for the year as a whole for public housing is likely to have been strongly positive, with output rising to its highest level since 2011. Thereafter, growth will be slower as the current relative weakness of new orders feeds into output in 2016.

Private housing output in Scotland remains relatively low, with 2014's outturn still only half the peak level in 2005. Therefore, there is plenty of scope for expansion, despite the devolved nation's weak demographic trends and the current poor new orders figures and weakness in house prices are expected to be short-lived. The £850m redevelopment of the St. James Centre in Edinburgh was given the go-ahead by local councillors in July. This mixed-use project will include 138 apartments and work demolishing the current structure is expected to start early this year. An innovative plan to fund restoration work on Loudoun Castle in East Ayrshire has been put forward by using the proceeds of the sale of up to 1,025 new homes to be built as part of a £450m mixed-use development around the site. If plans are approved work could start in 2016.



Output in the public non-housing sector is expected to have reached a new high in 2015, largely driven by work in the education sector. However, growth is likely to slow down sharply in 2016. According to the latest data from the Scottish Futures Trust, as of the start of October 20 schools have been completed under Scotland's Schools for the Future programme, with a further 31 currently under construction. In the universities sub-sector currently on site is a £40m expansion of the University of St Andrew's Sustainable Power and Research Campus and over £30m of work on sports facilities for Heriot-Watt University. In the pipeline are the £60m construction of a new School of GeoSciences for the University of Edinburgh and the £50m redevelopment of the University of Glasgow's Gilmorehill Campus.

The growth prospects for the industrial construction sector in the short term are modest. New orders are showing a falling profile, although there are some reasonably sized projects on site or in the pipeline, such as the £100m development of a new distillery and visitor centre for the Macallan estate in Moray, the expansion of facilities for Levenseat Ltd, a major waste management business in central Scotland, and BAE Systems redevelopment of both its Scotstoun and Govan shipyards, with the overall value of investment across the two sites likely to be in the order of £100m.

Growth in the commercial construction sector is expected to have resumed in 2015 and to continue into the short term given the benign economic environment and increasing scarcity of high quality office space in the two main markets. According to Bilfinger GVA's latest Big Nine report, second quarter office space take-up in Edinburgh was 13% up on the five-year average, but Glasgow's was slightly down. Both cities have experienced further tightening of availability of Grade A space, particularly in Edinburgh, which has seen a significant amount of conversion to other uses and the possibility of speculative development is becoming increasingly attractive. Detailed plans have now been lodged by Henry Boot for the £333m redevelopment of Aberdeen's conference and exhibition centre. Renfrewshire Council has granted planning permission for a new mixed-used development at Braehead, with the £200m project including retail and leisure facilities and a 200-bed hotel. Work is scheduled to start towards the end of 2016 and take three years to complete.

## 2.9 Construction output – long-term forecasts (2016–2020)

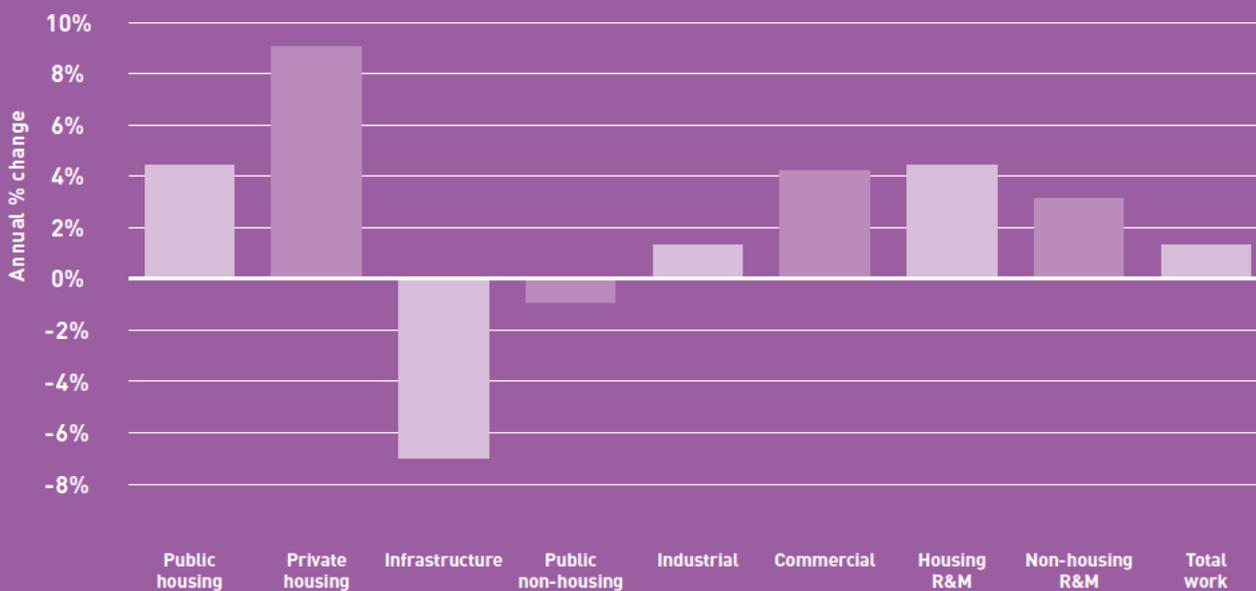
Construction output growth in Scotland is projected to average 0.5% a year over the five years to 2020, the weakest growth of the English regions and other devolved nations and well below the UK average of 2.5%. This is not due to any general weakness in the Scottish construction industry, but rather what is expected to happen in a very specific sector – infrastructure. If the infrastructure sector is taken out of the figures, then the annual average growth rate of the remaining sectors across the forecast period would be 2.3%, not far behind the UK rate (2.5%).

## CONSTRUCTION OUTPUT – SCOTLAND (£ MILLION, 2012 PRICES)

	Actual	Forecast annual % change			Annual average
	2014	2015	2016	2017	2016-2017
Public housing	454	16%	0%	9%	4.4%
Private housing	1,353	10%	11%	7%	9.0%
Infrastructure	2,322	41%	-3%	-10%	-6.9%
Public non-housing	1,173	6%	1%	-3%	-1.1%
Industrial	509	-5%	3%	-1%	1.3%
Commercial	1,999	6%	3%	5%	4.2%
<b>Total new work</b>	<b>7,810</b>	<b>17%</b>	<b>2%</b>	<b>-1%</b>	<b>0.3%</b>
Housing R&M	1,440	4%	5%	4%	4.4%
Non-housing R&M	1,908	0%	3%	3%	3.1%
<b>Total R&amp;M</b>	<b>3,348</b>	<b>2%</b>	<b>4%</b>	<b>3%</b>	<b>3.7%</b>
<b>Total work</b>	<b>11,158</b>	<b>13%</b>	<b>2%</b>	<b>0%</b>	<b>1.3%</b>

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

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2016-2017 – SCOTLAND



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

Employment is forecast to decline by 0.7% a year on average, however it will peak in 2016 before declining.



It is interesting that the Institution of Civil Engineers (ICE) in its latest report *The State of the Nation Infrastructure 2015 Scotland*, only gives an 'adequate for now' grading to strategic transport and water and waste water despite the rise in investment in the infrastructure sector in recent years. All other sectors were graded 'requires attention' or worse. That would suggest that a lot more investment is needed, but will the funding be available? At the moment the pipeline of projects post-2018 suggests not. It is also the case that after peaking in 2017/18 under the SR15 programme, output in the water and sewerage sub-sector will tail-off towards the end of the forecast period. Therefore, all the evidence is that once the current raft of projects under construction start to complete, infrastructure output will begin to drop quite sharply.

The performance of the public housing sector in the future is likely to rest with the success of the various National Housing Trust (NHT) funding schemes being developed, as local authority finances will remain tight over the medium term. Aberdeenshire has joined the Stirling and Scottish Borders councils in developing a local variant of the NHT funding vehicle for affordable housing. Furthermore, the first contract to deliver new homes under a NHT for Registered Social Landlords variant has been signed with Albyn Housing Society. It is hoped that there will be a continued build-up of activity under these types of funding streams.

Growth in the private housing sector is projected across almost all of the forecast period, at an annual rate of 4.1%. Even this level of expansion will leave output in the sector in 2020 45% below its 2005 peak in real terms. Growth is expected to be stronger in the short term and more moderate after 2017. The benign economic conditions forecast for the whole period should provide the framework within which the sector will continue to expand, but rises in interest rates and less dynamic growth in real disposable incomes from 2017 are likely to have an impact on the market.

Over the whole of the forecast period output in the public non-housing sector is projected to remain largely flat despite expansion in defence work, as university construction starts to subside from its current high level. According to the Government's Construction Pipeline investment by the Defence Infrastructure Organisation in Scotland should total around £101m in 2015/16, rising to £117m in 2016/17. A further £628m is scheduled to be spent between 2017 and 2020, suggesting that work in the sub-sector is likely to increase.

Industrial construction output is projected to remain largely static over the whole of the forecast period. While the prospects for exports are expected to improve in the medium term as in particular expansion in the eurozone accelerates, growth in domestic demand is likely to slow a little, effectively cancelling each other out. Of the sectors that drive demand for industrial space, manufacturing output is projected to expand by a relatively modest 1.5% a year on average to 2020, while growth in the transport and storage sector is predicted to be a more robust 2.6%. This would suggest that demand for distribution and logistics facilities is likely to be stronger than that for factories.

Commercial construction output in Scotland is projected to grow by an annual average rate of just over 3% in the five years to 2020. Further tightening of the availability of Grade A office space in the main Scottish markets should provide the impetus for new office building and this should be reinforced by good growth in both the professional and other private services (2.7% a year on average) and finance and insurance (2.4%) sectors. The prospects for retail and leisure construction are probably a little less buoyant, with the wholesale and retail, and accommodation, food services and recreation sectors only expected to expand by 1.8% a year on average.

Scotland's Sustainable Housing Strategy sets out a number of milestones that the Scottish Government is working towards to 2020 including every home to have loft and cavity wall insulation, where this is cost-effective and technically feasible, plus draught-proofing measures such as pipe lagging. Every home heated with gas central heating should have a highly efficient boiler with appropriate controls, and at least 100,000 homes should have adopted some form of individual or community renewable heat technology for space and/or water heating.

## 2.10 Beyond 2020

In the longer term Scotland will continue to look to improve its transport infrastructure. While a number of sections of the £3bn project to dual the A9 between Perth and Inverness are already in preparation and likely to start before 2020 the whole scheme is not due to complete until 2025. Plans are also in preparation to dual the A96 between Aberdeen and Inverness, which is scheduled to complete by 2030.

Construction of upgrades to improve connectivity between Inverness and the Central Belt are already underway in the rail sector. This is another project on which work will continue until 2025. In preparation are improvements to the rail link between Aberdeen and Inverness, also, like the A96, scheduled to complete by 2030.

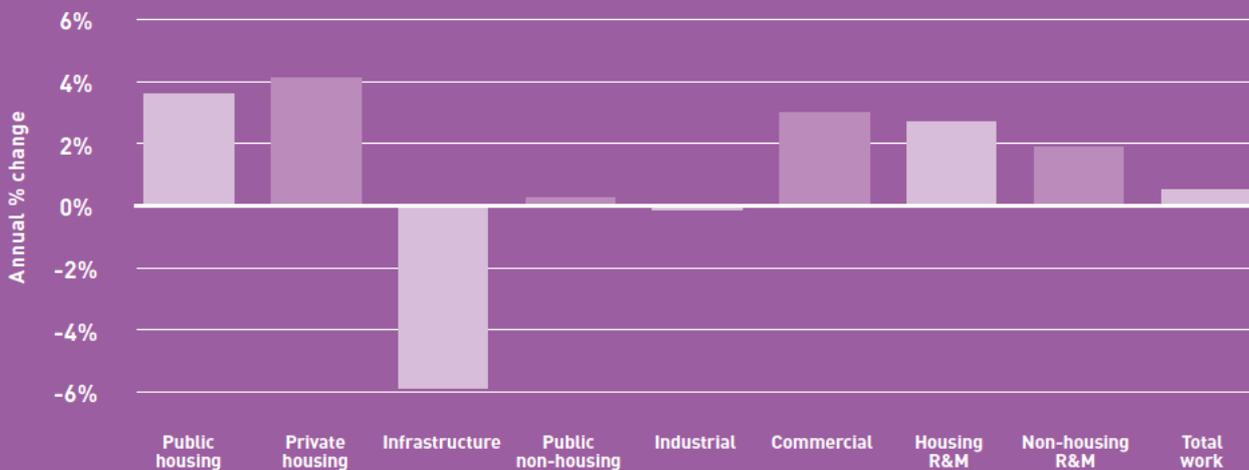
In the energy sector there are 10 offshore wind farms, four wave and four tidal projects in the planning stage. Many of them will get on site before the end of the current forecast period, but work is likely to continue on some well past 2020. It should be remembered, however, that the construction element of such projects is relatively small – in the case of offshore wind farms about 20% of the total value.

## CONSTRUCTION OUTPUT – SCOTLAND (£ MILLION, 2012 PRICES)

	Estimate	Forecast annual % change					Annual average
	2015	2016	2017	2018	2019	2020	2016-2020
Public housing	527	0%	9%	9%	2%	-1%	3.6%
Private housing	1,491	11%	7%	-2%	2%	3%	4.1%
Infrastructure	3,275	-3%	-10%	-4%	-13%	1%	-5.9%
Public non-housing	1,247	1%	-3%	2%	-2%	3%	0.2%
Industrial	485	3%	-1%	2%	-2%	-3%	-0.1%
Commercial	2,128	3%	5%	4%	4%	-1%	3.1%
<b>Total new work</b>	<b>9,154</b>	<b>2%</b>	<b>-1%</b>	<b>0%</b>	<b>-3%</b>	<b>1%</b>	<b>-0.1%</b>
Housing R&M	1,500	5%	4%	-1%	3%	3%	2.7%
Non-housing R&M	1,912	3%	3%	1%	1%	2%	1.9%
<b>Total R&amp;M</b>	<b>3,413</b>	<b>4%</b>	<b>3%</b>	<b>0%</b>	<b>2%</b>	<b>2%</b>	<b>2.3%</b>
<b>Total work</b>	<b>12,566</b>	<b>2%</b>	<b>0%</b>	<b>0%</b>	<b>-1%</b>	<b>1%</b>	<b>0.5%</b>

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

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2016-2020 – SCOTLAND



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



## SECTION 3

# CONSTRUCTION EMPLOYMENT FORECASTS FOR SCOTLAND

### 3.1 Total construction employment forecasts by occupation

The table presents actual construction employment (SICs 41-43, 71.1, and 74.9) in Scotland for 2014, the estimated total employment across 28 occupational categories in 2015 and forecasts for the industry for 2016 to 2020. A full breakdown of occupational groups is provided in Section 5 of CSN Explained.

Construction employment in Scotland is projected to continue to increase from an estimated 226,000 in 2015 to just over 230,000 in 2016 before dropping to a little less than 219,000 in 2020, which gives an overall employment growth rate of -0.7% across the forecast period. To compare to previous years, employment in 2020 would be slightly lower than 2014 (221,000) and below peak employment recorded in 2008 of 252,000.

This decline is due to the annual average output growth of 0.5% not being enough to drive employment growth given expected productivity gains. With employment reducing by -0.7% and output growing by 0.5% there is an implied productivity gain of 1.2% a year as the industry attempts to claw back some of the poor productivity outcomes from the recession.

The strong output growth in Scotland from the second half of 2013 has driven employment growth, which looks set to continue into 2016 and is causing current skills shortages, particularly for craft trades such as bricklaying, carpentry and joinery. Recent reports from the Federation of Master Builders (FMB) and CITB's research work point to employers in Scotland finding it more difficult to recruit workers at the moment.

While the speed of an increase in addition to the size can sometimes cause such shortages, our assumption is that this short-term pressure will ease in the medium to long term as the declines in infrastructure activity are likely to release elements of the workforce to work in other, growing sectors. However, this view will need to be monitored as the recent Skills Investment Plan from Skills Development Scotland shows a 35% fall in further education students on construction-related courses in Scotland between 2008/9 and 2013/14 and a 20% fall in the number of higher education students, therefore the future recruitment of new entrants into the construction workforce could continue to be challenging.

Although overall employment is expected to decline, this won't be the case for all 28 occupational categories with 11 expected to grow, in particular for construction management personnel and professionals.





## TOTAL EMPLOYMENT BY OCCUPATION – SCOTLAND

	Actual 2014	Estimate 2015	Forecast	
			2016	2020
Senior, executive, and business process managers	12,650	12,420	12,580	11,980
Construction project managers	3,420	3,670	3,790	3,820
Other construction process managers	15,600	15,850	16,310	16,250
Non-construction professional, technical, IT and other office-based staff	27,170	28,550	29,060	27,920
Construction trades supervisors	4,150	4,470	4,560	4,360
Wood trades and interior fit-out	22,290	22,140	22,530	20,670
Bricklayers	5,950	5,900	6,000	5,520
Building envelope specialists	4,090	4,430	4,490	4,100
Painters and decorators	10,700	10,470	10,540	9,410
Plasterers	2,790	2,710	2,730	2,380
Roofers	4,040	4,390	4,450	4,100
Floorers	2,110	2,290	2,310	2,130
Glaziers	2,450	2,650	2,700	2,510
Specialist building operatives nec*	4,110	4,020	4,070	3,700
Scaffolders	2,320	2,290	2,360	2,300
Plant operatives	4,220	4,130	4,270	4,250
Plant mechanics/fitters	4,390	4,320	4,380	3,980
Steel erectors/structural fabrication	2,020	1,980	2,040	1,970
Labourers nec*	11,970	11,720	11,960	11,560
Electrical trades and installation	15,550	16,810	16,980	15,310
Plumbing and HVAC Trades	11,460	11,180	11,040	9,530
Logistics	2,360	2,310	2,360	2,320
Civil engineering operatives nec*	2,610	2,580	2,670	2,660
Non-construction operatives	3,260	3,520	3,640	3,650
Civil engineers	7,460	8,070	8,320	8,380
Other construction professionals and technical staff	21,060	22,390	23,010	22,880
Architects	4,250	4,150	4,250	4,190
Surveyors	6,210	6,700	6,910	6,950
<b>Total (SIC 41-43)</b>	<b>181,680</b>	<b>184,800</b>	<b>187,820</b>	<b>176,380</b>
<b>Total (SIC 41-43, 71.1, 74.9)</b>	<b>220,660</b>	<b>226,110</b>	<b>230,310</b>	<b>218,780</b>

Source: ONS, CSN, Experian. Ref: CSN Explained, Section 3, Notes 5 and 6  
\*Not elsewhere classified



### 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. The ARR therefore provides an indication of the number of new workers that would need to be recruited into construction each year in order to realise forecast output.

The fact that overall construction employment is predicted to decline in Scotland does not mean that the devolved nation has no ARR. There will still need to be replacement of net outflows from the industry.

Scotland's ARR, at 4,270, represents 1.9% of base 2016 employment, a little higher than the UK ratio (1.7%). Scotland's demographics in terms of an ageing population means that it is expected to lose a larger percentage of its workforce to retirement than the UK average.

Logistics has been flagged up with a red traffic light, that is, its ARR ratio to base employment is over 5%, and this is the case across the UK. Construction trades supervisors has also been flagged up in this category.

It should be remembered that the ARR is a five-year average and given the recent and projected profile of output in Scotland, the requirement is likely to be higher in the short term and lower in the medium term. As noted earlier, while the current recruitment of craft tradespeople is proving challenging due to increases in output, the forecast sees demand levelling off, which is why an ARR for some trades has not been identified.

Please note that all of the ARR's 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.





## ANNUAL RECRUITMENT REQUIREMENT BY OCCUPATION – SCOTLAND

	2016-2020
Senior, executive, and business process managers	200
Construction project managers	-
Other construction process managers	-
Non-construction professional, technical, IT and other office-based staff	1,520
Construction trades supervisors	310
Wood trades and interior fit-out	-
Bricklayers	-
Building envelope specialists	-
Painters and decorators	350
Plasterers	-
Roofers	-
Floorers	-
Glaziers	-
Specialist building operatives nec*	-
Scaffolders	-
Plant operatives	50
Plant mechanics/fitters	100
Steel erectors/structural fabrication	50
Labourers nec*	540
Electrical trades and installation	-
Plumbing and HVAC Trades	100
Logistics	180
Civil engineering operatives nec*	70
Civil engineers	180
Other construction professionals and technical staff	620
Architects	-
Surveyors	-
<b>Total (SIC 41-43)</b>	<b>3,470</b>
<b>Total (SIC 41-43, 71.1, 74.9)</b>	<b>4,270</b>

Source: CSN, Experian. Ref: CSN Explained, Section 3, Notes 5 and 6  
\*Not elsewhere classified



## SECTION 4

# COMPARISONS ACROSS THE UK

# 2.5%

The overall UK forecast of an annual average rise in output of 2.5% over the 2016 to 2020 period is a little higher than the 2.1% seen in the last growth period for construction between 1995 and 2007. However, it disguises some quite different regional/devolved nation performances, from expected expansion of over 7% in Wales to just 0.5% in Scotland.

Wales and the South West are top of the growth rankings and have remained so for some time, but their strong performance is heavily predicated on nuclear new build projects at Hinkley Point and Wylfa. Greater London is also projected to have a strong infrastructure sector, with the work starting on the Northern Line extension and Thames Tideway and High Speed 2 in the pipeline. These projects should more than offset completion of the Crossrail and Thameslink schemes.

While growth in London and the East of England is expected to be robust, the forecast for the South East is relatively poor with a dearth of major projects in the pipeline, the £2bn Paramount Park scheme excepted. Therefore, the forecasts are less South East England centric than they sometimes can be.

Northern Ireland is likely to be one of the faster growing regions in the five years to 2020, although construction output will be coming back from a very low base and there are concerns that current political uncertainties could delay the start of public projects.

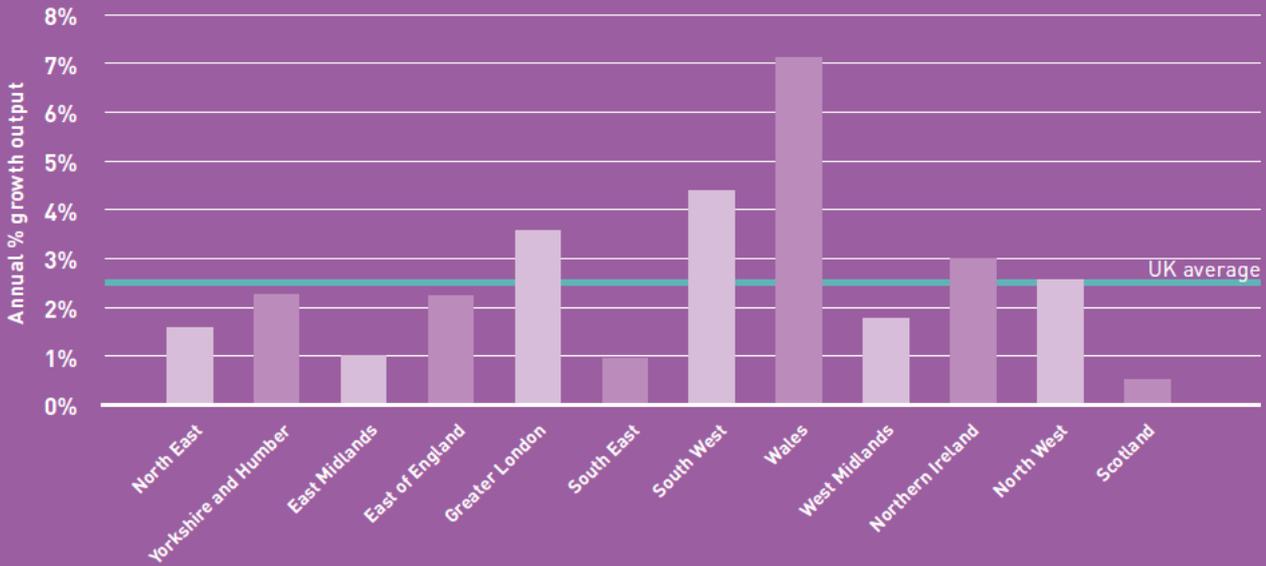
Scotland is seeing an exceptionally high level of investment in infrastructure at present, with output in 2014 around twice its previous 10 year average and due to increase even further in 2015. Thereafter projects, such as the current spate of motorway upgrades, begin to complete and activity in the sector is likely to fall sharply, bringing the overall Scottish construction growth rate down to only about half a per cent a year on average.

Employment growth across the regions and devolved nations tends to mirror that of output, but at a lower level to take account of expected productivity gains and with some minor adjustments depending on whether output growth is in high or low labour intensive sectors. Annual employment growth across the UK as a whole is projected to average 1.1% over the 2016 to 2020 period, with a high of 2.9% in Wales and a low of a 0.7% a year decline in Scotland. Despite the fact that nuclear new build is not particularly labour intensive, Wylfa is a very big project in a small market, therefore it will add nearly 2% to construction employment in Wales in 2020. The impact is smaller in the South West, which has a bigger construction market, but even there it will help to drive good employment growth of over 2% a year on average. In Scotland the converse is true and a sharp fall in infrastructure output, despite its relatively low labour input, is likely to lead to a drop in construction employment north of the border post 2016.

The pattern of ARR can look significantly different from the profile of output and employment, as some regions and devolved nations have historically strong net inflows and some suffer from large net outflows. The most extreme examples of this trend tend to be Greater London and Wales. London has a relatively low ARR despite strong projected employment growth (2% a year) as it acts as a natural magnet for construction workers throughout the UK and beyond, therefore its ARR ratio to base 2016 employment is low at 0.9%. At the other end of the scale Wales tends to suffer strong net outflows, in particular to the North West and South West of England and this, combined with a buoyant output and employment growth forecast, means its ARR ratio to base 2016 employment is a high 4.7%.

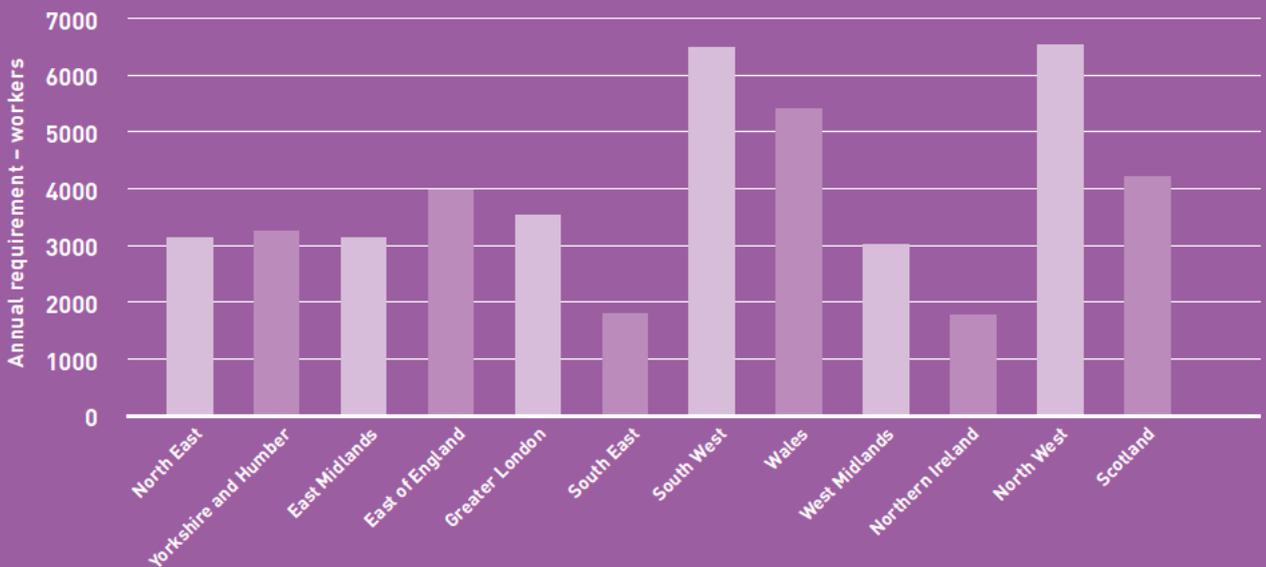


### ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH BY REGION 2016-2020 SCOTLAND



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

### ANNUAL RECRUITMENT REQUIREMENT (ARR) BY REGION 2016-2020



Source: CSN, Experian

Despite an overall drop in employment, Scotland will still need an average of 4,270 new workers each year between 2016-2020.



# 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.





## SECTION 1

# CSN METHODOLOGY

## Background

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

ConstructionSkills is the Sector Skills Council for Construction and produces robust labour market intelligence that 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 and 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 and 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 that 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 ARR 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:

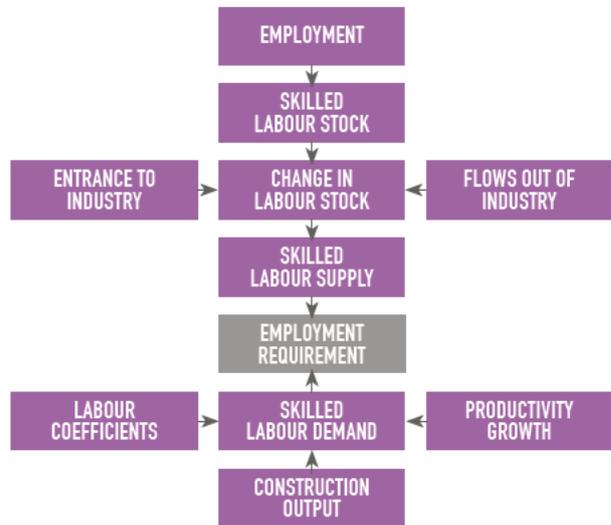
- Transfers to other industries
- International/domestic out migration
- Permanent retirements (including permanent sickness)
- Outflow to temporary sickness and home duties.

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.





## SECTION 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 that 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.



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

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

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

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



## 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 SummitSkills across SIC 43.21 and SIC 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.

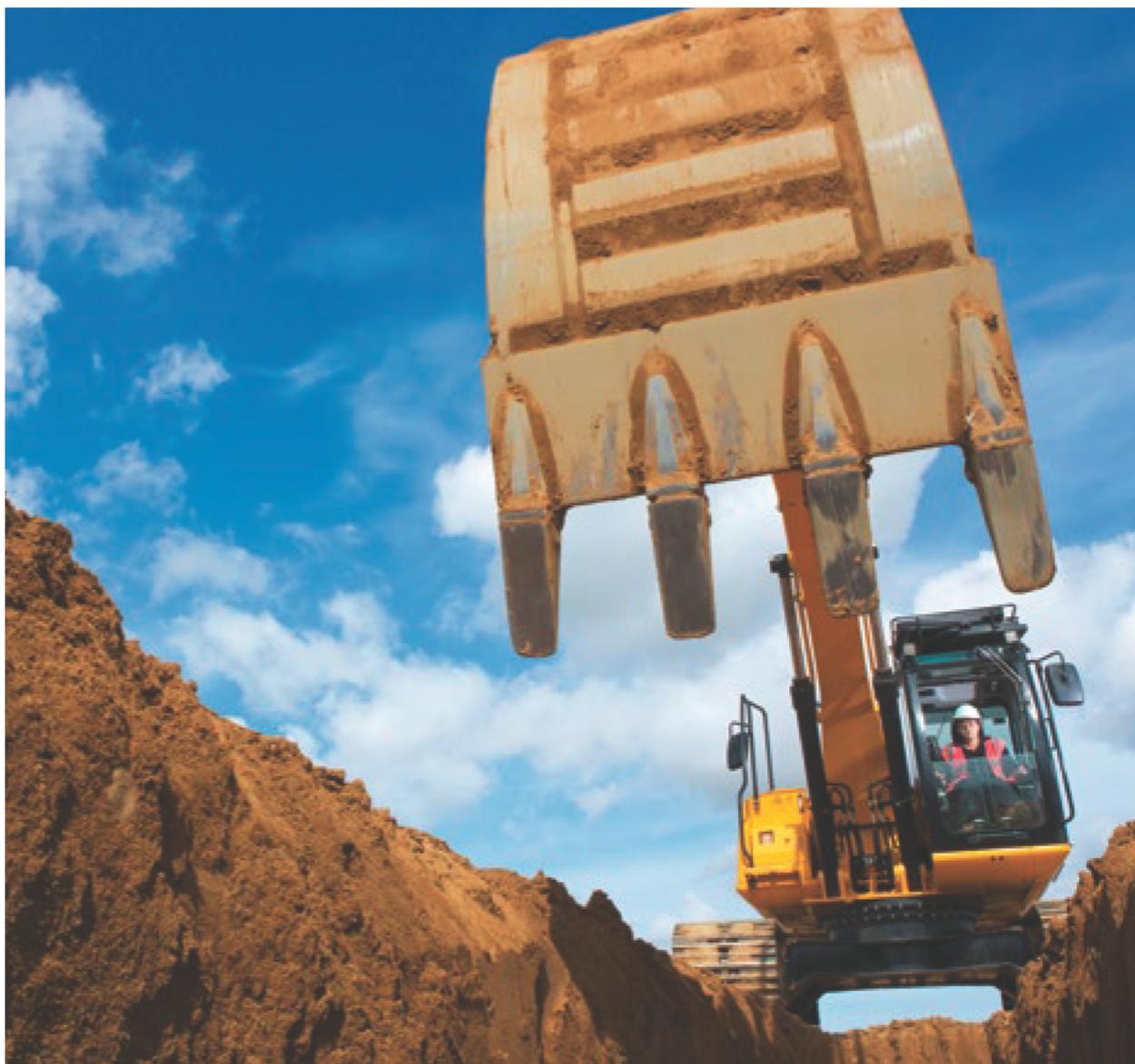
**Coverage** – property, housing and land managers, chartered surveyors, estimators, valuers, home inspectors, estate agents and auctioneers (property and chattels), caretakers, mobile and machine operatives, window cleaners, road sweepers, cleaners, domestics, facilities managers.

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.





## SECTION 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 construction<sup>1</sup>**

#### **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 work<sup>1</sup>

#### 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.<sup>2</sup>

### 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.<sup>3</sup>

- 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.



## SECTION 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
Bookkeepers, 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
<b>Construction trades supervisors</b>	
Skilled metal, electrical and electronic trades supervisors	5250
Construction and building trades supervisors	5330
<b>Wood trades and interior fit-out</b>	
Carpenters and joiners	5315
Paper and wood machine operatives	8121
Furniture makers and other craft woodworkers	5442
Construction and building trades nec* (25%)	5319
<b>Bricklayers</b>	
Bricklayers and masons	5312
<b>Building envelope specialists</b>	
Construction and building trades nec* (50%)	5319
<b>Painters and decorators</b>	
Painters and decorators	5323
Construction and building trades nec* (5%)	5319
<b>Plasterers</b>	
Plasterers	5321
<b>Roofers</b>	
Roofers, roof tilers and slaters	5313
<b>Floorers</b>	
Floorers and wall tilers	5322

<b>Glaziers</b>	
Glaziers, window fabricators and fitters	5316
Construction and building trades nec* (5%)	5319
<b>Specialist building operatives not elsewhere classified (nec*)</b>	
Construction operatives nec* (100%)	8149
Construction and building trades nec* (5%)	5319
Industrial cleaning process occupations	9132
Other skilled trades nec*	5449
<b>Scaffolders</b>	
Scaffolders, staggers and riggers	8141
<b>Plant operatives</b>	
Crane drivers	8221
Plant and machine operatives nec*	8129
Fork-lift truck drivers	8222
Mobile machine drivers and operatives nec*	8229
<b>Plant mechanics/fitters</b>	
Metalworking 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
<b>Steel erectors/structural fabrication</b>	
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
<b>Labourers nec*</b>	
Elementary construction occupations (100%)	9120
<b>Electrical trades and installation</b>	
Electricians and electrical fitters	5241
Electrical and electronic trades nec*	5249
Telecommunications engineers	5242
<b>Plumbing and heating, ventilation, and air conditioning trades</b>	
Plumbers and heating and ventilating engineers	5314
Pipe fitters	5216
Construction and building trades nec* (5%)	5319
Air-conditioning and refrigeration engineers	5225

\*Not elsewhere classified



### 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
Metalworking 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

### Civil engineers

Civil engineers	2121
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### 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
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### Surveyors

Quantity surveyors	2433
Chartered surveyors	2434

*\*Not elsewhere classified*





## SECTION 6

# CSN WEBSITE AND CONTACT DETAILS

### The CSN website [citb.co.uk/csn](http://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 12 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 that 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](mailto:csn@citb.co.uk)

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Construction Skills Network, contact:

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[citb.co.uk](http://citb.co.uk)



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