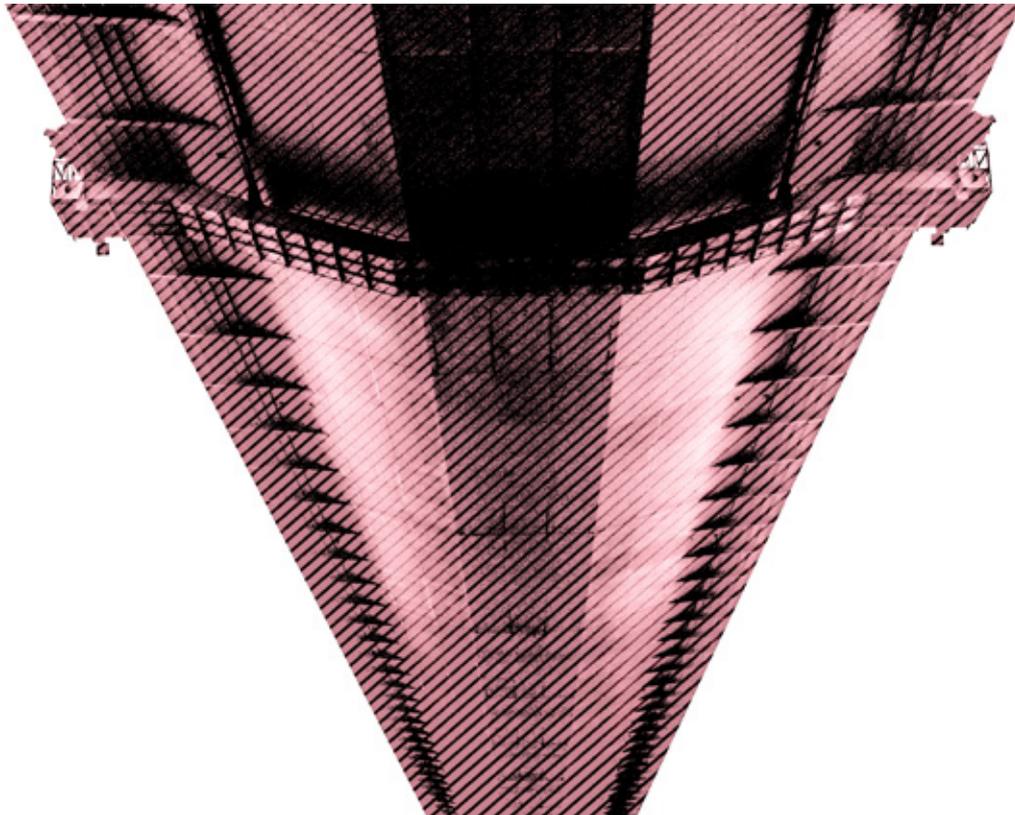


# INDUSTRY INSIGHTS

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Construction Skills Network  
**Forecasts 2017–2021**



**YORKSHIRE AND HUMBER**

**About CITB**

CITB is the Industrial Training Board (ITB) for the construction industry in Great Britain (England, Scotland and Wales). CITB ensures employers can access the high quality training their workforce needs and supports industry to attract new recruits into successful careers in construction.

Using its evidence base on skills requirements, CITB works with employers to develop standards and qualifications for the skills industry needs now, and in the future. CITB is improving its employer funding to invest in the most needed skills and by making it easier for companies of all sizes to claim grants and support.

**About Experian**

Experian's Construction Futures team is a leading construction forecasting team in the UK, specialising in the economic analysis of the construction and related industries in the UK and its regions. As such, we have an in-depth understanding of the structure of the construction industry and its drivers of change. The Construction Futures team has collaborated on the Construction Skills Network employment model with the CITB since 2005, manages a monthly survey of contractors' activity as part of the European Commission's harmonised series of business surveys, and a quarterly State-of-Trade survey on behalf of the Federation of Master Builders.

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# SUMMARY – YORKSHIRE AND HUMBER

Construction output in Yorkshire and Humber is forecast to grow at an annual average rate of 0.5% between 2017 and 2021, as opposed to 1.7% at the national level. This represents a substantial downgrade compared to last year's projection of an increase of 2.4% a year in the five years to 2020. Growth in employment is forecast to contract by 0.1% a year on average, again trailing the UK estimate (1.2%). The annual average recruitment requirement (ARR) for Yorkshire and Humber is predicted to be 1,860. This represents 0.9% of base 2017 employment.

Growth is expected to focus on the Infrastructure sector in the short term, by

## 1.5%

Yorkshire and Humber has an ARR of

## 1,860

Employment will remain stable with an average change of only

## -0.1%

per year

## KEY FINDINGS

Total construction output in Yorkshire and Humber declined by 8% in 2015, to £8.9bn in 2013 prices. This represents a 29% decrease on the pre-recession peak of £12bn in 2004. There was a decline of 4% in new work, and a 15% contraction in repair and maintenance (R&M) work. An annual contraction of 32% in the commercial sector drove the decline in new work construction output. The industrial and public housing sectors registered the largest increases.

In the first three quarters of 2016 construction output in the region came in at £7.6bn in current prices, a 5% increase on the same period of 2015. The increase was driven by a gain of 25% in total R&M work, as well as rises of 13% in private housing, and 12% in public non-housing. There were heavy declines in the public housing and infrastructure sectors, at 44% and 27% respectively. The industrial sector contracted by 12%, and the commercial sector by 1%.

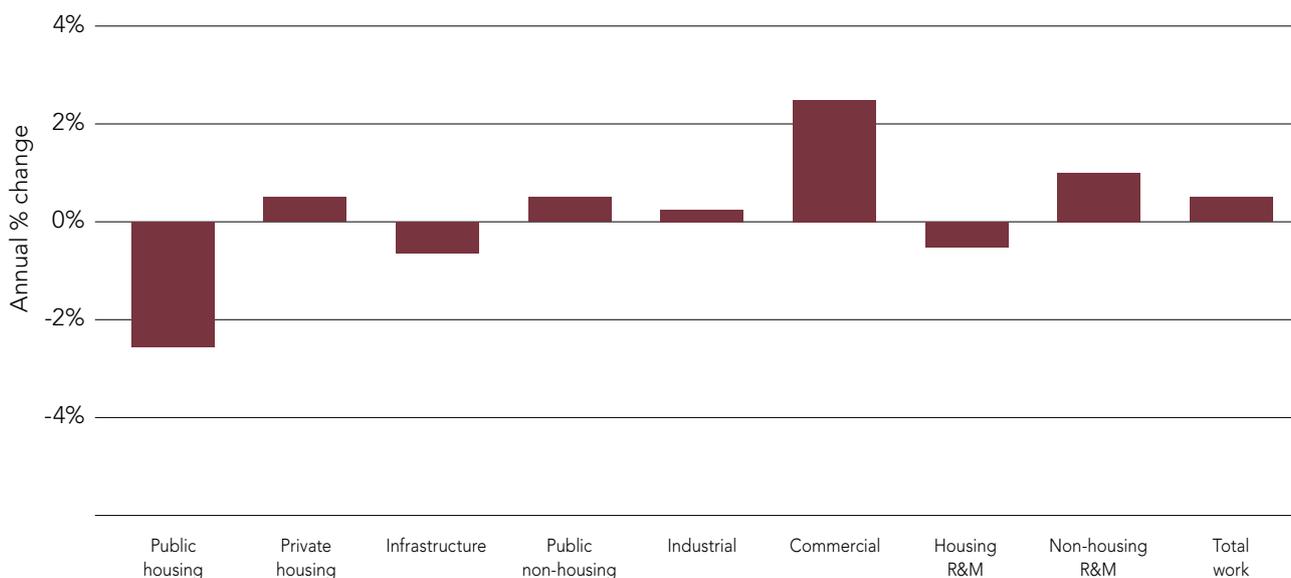
In the 2017–2021 period construction output in Yorkshire and Humber is predicted to grow at an annual average rate of 0.5%, against a 0.3% a year contraction in the short term. Output growth in the commercial sector is

expected to drive the gains, with some support also coming from the industrial, private housing and public non-housing sectors. Contractions are forecast in the public housing and infrastructure sectors, with the former continuing to underperform the regional average by a wide margin.

Total construction employment in Yorkshire and Humber is predicted to remain fairly stable in the five years to 2021. This compares to an increase of 0.6% at the national level. In numbers this represents a slight fall from 199,890 in 2016 to 198,610 in 2021. Managerial/supervisory and professional occupational categories are generally expected to fare better than the trades, with 13 out of 28 occupations likely to see increases in employment over the next five years.

The ARR in the region is forecast to be 1,860 in the 2017–2021 period. This represents 0.9% of base 2017 employment. In percentage terms only four occupations were flagged as having a medium or high requirement (greater than 2.6% of base 2017 employment) and these are, Construction project managers, Surveyors, Plant operatives and Logistics.

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017-2021 – YORKSHIRE AND HUMBER



Source: CSN, Experian.  
Ref: CSN Explained.

## REGIONAL COMPARISON 2017-2021

	Annual average % change in output	Change in total employment	Total ARR
North East	-0.1%	-2,840	1,270
Yorkshire and Humber	0.5%	-1,300	1,860
East Midlands	0.0%	-2,340	1,770
East of England	1.0%	3,230	3,970
Greater London	2.4%	27,110	3,870
South East	2.2%	25,550	3,940
South West	3.1%	8,240	4,180
Wales	6.2%	16,120	3,890
West Midlands	1.3%	4,280	2,800
Northern Ireland	1.6%	1,430	710
North West	2.5%	14,520	5,140
Scotland	-0.4%	-8,420	2,340
<b>UK</b>	<b>1.7%</b>	<b>85,580</b>	<b>35,740</b>

Source: CSN, Experian.  
Ref: CSN Explained.

Construction output is forecast to grow at an annual average rate of 0.5%.

# THE OUTLOOK FOR CONSTRUCTION IN YORKSHIRE AND HUMBER

## CONSTRUCTION OUTPUT IN YORKSHIRE AND HUMBER – OVERVIEW

In 2015 total construction output in Yorkshire and Humber declined by 8% to £8.9bn in 2013 prices. This follows gains of 1% in 2013 and 11% in 2014, although output is still down when compared to the average of £11.4bn per year in the five years before 2008.

The contraction in 2015 can be attributed in a large part to a decline of 15% in repair and maintenance (R&M) work as the fall in construction output for new work was a more modest 4%. Within the new work sector only commercial construction registered a decline in output, but as the fall was nearly a third in the second biggest sector in the region, it dragged the overall figures down. The largest increase was in the industrial sector, at 50%, followed by public housing at 25%.

## INDUSTRY STRUCTURE

The Construction Industry structure 2015 – UK vs Yorkshire and Humber graphic, illustrates the sector breakdown of construction in Yorkshire and Humber, 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 Yorkshire and Humber construction industry mirrors that of the UK as a whole very closely, with all sector shares in the region within plus or minus 2% of the national average.

## ECONOMIC OVERVIEW

The expected performance of a regional or national economy over the forecast period (2017–2021) provides an indication of the construction sectors in which demand is likely to be strongest.

Gross value added (GVA) in Yorkshire and Humber grew by 2% year-on-year in 2015, to £105bn in 2012 prices. This follows expansion of 1.2% in 2013, and 1.8% in 2014.

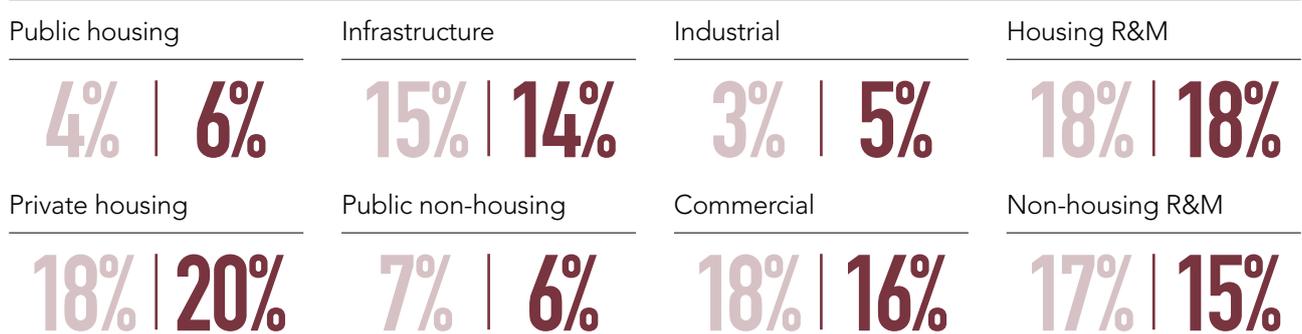
## ECONOMIC STRUCTURE

The professional and other private services sector accounted for the largest share of total output in Yorkshire and Humber in 2015, at 24%. The sector's share of output has grown by 3% since 2007. However it is still underrepresented in the region compared to at the national level where it makes up 28% of output.

Conversely the large manufacturing, wholesale and retail, and public services sectors are markedly overrepresented in the region compared to the UK average. Between 2007 and 2015 the wholesale and retail and public services sectors have seen their share of total output increase marginally, while the share of the manufacturing sector has fallen by one and a half percent.



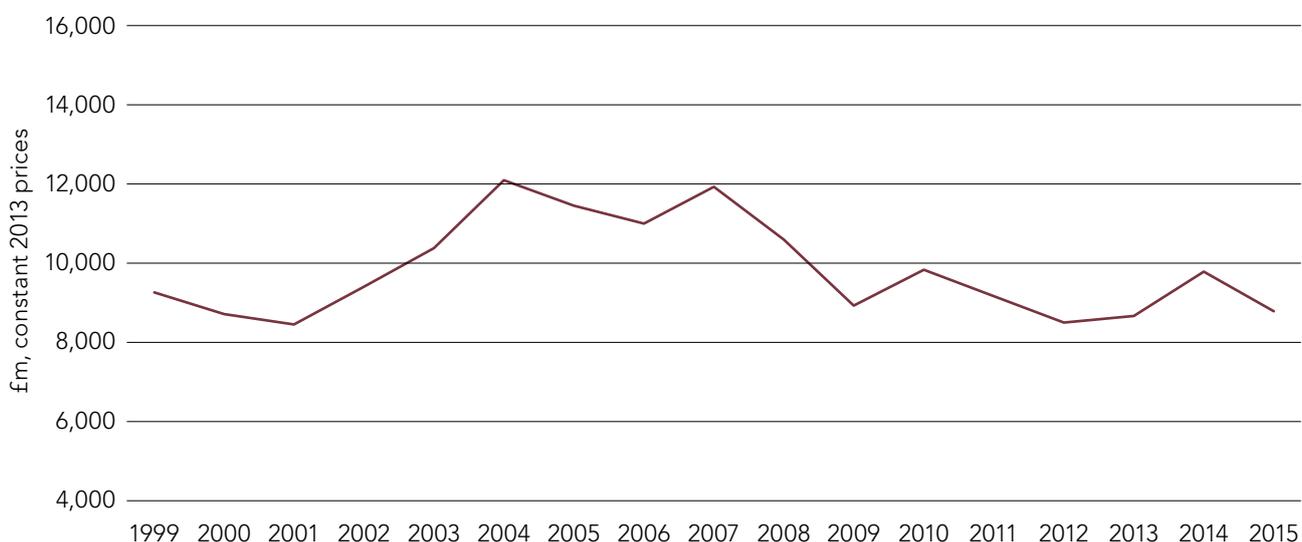
## CONSTRUCTION INDUSTRY STRUCTURE 2015 – UK VS YORKSHIRE AND HUMBER



Source: ONS, Experian.

■ UK ■ Yorkshire and Humber

## CONSTRUCTION OUTPUT 1999-2015 – YORKSHIRE AND HUMBER



Source: ONS.  
Ref: CSN Explained.

## ECONOMIC STRUCTURE – YORKSHIRE AND HUMBER (£ BILLION, 2012 PRICES)

	Actual	Forecast (Annual % change, real terms)					
	2015	2016	2017	2018	2019	2020	2021
Professional & Other Private Services	25.3	2.4	1.4	1.2	1.8	2.1	2.3
Public Services	22.9	1.2	0.5	0.7	1.5	2.3	2.4
Manufacturing	14.6	-0.6	0.0	1.1	1.0	0.8	0.9
Wholesale & Retail	13.7	4.6	1.2	1.5	1.9	2.1	2.2
Transport & Storage	5.0	0.2	2.4	2.4	2.1	2.2	2.3
<b>Total Gross Value Added (GVA)</b>	<b>105.2</b>	<b>1.8</b>	<b>0.9</b>	<b>1.1</b>	<b>1.6</b>	<b>1.9</b>	<b>2.1</b>

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

## FORWARD LOOKING ECONOMIC INDICATORS

In 2016 GVA growth in Yorkshire and Humber is estimated to have moderated to 1.8% from 2% in 2015.

In the 2017–2021 period GVA is predicted to grow at an annual average rate of 1.5%, compared to 1.8% at the national level. The GVA outlook generally is weaker than was anticipated a year ago due to global uncertainties, not just as a result of the European Union referendum result in the UK, but also linked to the recent U.S. elections and continuing instability in the Middle East.

The information and communication and transport and storage sectors are forecast to grow the fastest in the 2017–2021 period, at annual average rates of 2.1% and 2% respectively. Accommodation, food services and recreation is also expected to grow by a decent 1.9%.

The large wholesale and retail and professional and other private services sectors are expected to grow at an annual average rate of 1.8% in the 2017–2021 period. This places them in the middle of the pack in terms of output growth.

Public services and manufacturing, the other two large sectors in the region, saw output decline in 2015 and 2016. In the 2017–2021 period manufacturing is predicted to grow at an annual average rate of 0.8%, making it the worst performing sector. The public services sector is forecast to grow by 1.5%, in line with the regional average.

Real household disposable incomes in the region contracted in 2013 and 2014, but grew by 3.7% in 2015, buoyed by exceptionally low inflation and decent earnings growth. In 2016, as inflation crept up slightly, real household disposable income growth in the region is estimated to have moderated to 2.5%, and in 2017 a mild contraction is expected. In the 2017–2021 period growth of 1.3% a year on average is projected.

The unemployment rate in Yorkshire and Humber peaked in 2012 at 9.3%, compared to a high of 8.1% a year earlier at the UK level. By 2015 the unemployment rate in the region had fallen to 6.3% and is estimated to have fallen further to 5.8% in 2016. In 2017 we expect the rate to increase to 6.1% and average 6.1% in the 2017–2021 period. This compares to an average of 5.7% at the national level.

## NEW CONSTRUCTION ORDERS – OVERVIEW

New construction orders in Yorkshire and Humber declined by nearly 12% in 2015, following three years of growth. At £3.9bn the outturn was well down on the 2007 peak of £7.1bn.

There was a large decline in orders in the public housing and commercial sectors in 2015, of 70% and 27% respectively. Public housing orders of £95m in current prices were well down on the average for the five years prior, of £196m, while infrastructure outturn was £897m, compared to a pre-recession peak of £3bn in 2007.

Construction orders also contracted in the infrastructure (-10%) and private housing (-4%) sectors and stagnated in public non-housing. In the former, orders totalled £605m in

current prices, compared with an average of £797m in the 2009–2014 period. The private housing outturn of £1.2bn was up on the average over the five years prior to 2015, of £871m, though down on the 2007 peak of £1.6bn. In the public non-housing sector orders were £532m in 2015, compared with a high of £1.7bn in 2009.

Only the industrial sector grew in 2015, by a strong 36%. At £556m in current prices the outturn was greater than the average in the five years leading up to 2015 of £293m, though is below the £872m peak in 2006.

## NEW CONSTRUCTION ORDERS – CURRENT SITUATION

In the first three quarters of 2016 the value of new orders reached £3.3bn. This represents a 15% increase on the same three quarters of 2015. On a four-quarter moving total basis there was a large increase in the third quarter of 2016 and new orders had increased in four of the last five quarters up to this point.

The year-on-year increase in total new orders in the first three quarters of 2016 was driven by a gain of 151% in the infrastructure sector. On a four quarter moving total basis the outturn in the third quarter of the year was the highest since the third quarter of 2013. The public housing and commercial sectors also made a strong contribution, growing by 60% and 34% respectively. In the private housing sector there was a gain of 3%.

The industrial sector registered a 42% decline, while there was a contraction of 37% in the public non-housing sector. On a four quarter moving total basis both sectors have been in decline in the four quarters to the third quarter of 2016.

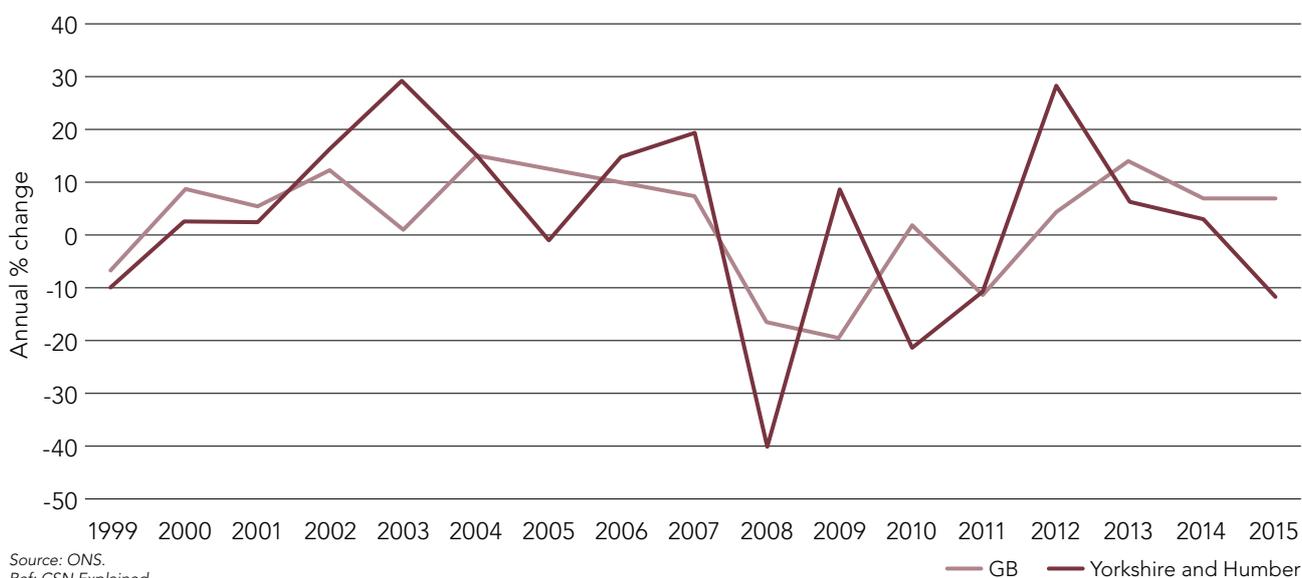


## ECONOMIC INDICATORS – YORKSHIRE AND HUMBER (£ BILLION, CURRENT PRICES – UNLESS OTHERWISE STATED)

	Actual	Forecast (Annual % change, real terms)					
	2015	2016	2017	2018	2019	2020	2021
Real household disposable income (2012 prices)	84.2	2.5	-0.1	1.3	1.4	1.9	2.1
Household spending (2012 prices)	86.8	2.6	1.3	0.5	1.3	1.8	2.0
Working age population (000s and as % of all)	3,351	62.4%	62.3%	62.2%	62.3%	62.7%	62.6%
House prices (£)	141,917	2.5	0.6	0.9	1.9	2.0	2.2
LFS unemployment (millions)	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Source: ONS, DCLG, Experian.

## NEW CONSTRUCTION ORDERS GROWTH 1999-2015 – YORKSHIRE AND HUMBER VS GB



## NEW WORK CONSTRUCTION ORDERS – YORKSHIRE AND HUMBER (£ MILLION, CURRENT PRICES)

	Actual	Annual % change				
	2015	2011	2012	2013	2014	2015
Public housing	95	13.4	-62.3	105.8	62.1	-66.9
Private housing	1,206	5.9	15.7	44.2	16.4	-4.4
Infrastructure	605	16.3	242.1	-15.5	-38.4	-10.1
Public non-housing	532	-33.4	-11.0	-36.2	15.3	-0.4
Industrial	556	-27.8	212.2	-47.6	69.4	35.6
Commercial	897	-2.8	-25.2	80.8	-0.6	-27.3
<b>Total new work</b>	<b>3,891</b>	<b>-10.8</b>	<b>27.7</b>	<b>7.3</b>	<b>2.4</b>	<b>-11.6</b>

Source: ONS.  
Ref: CSN Explained.

## CONSTRUCTION OUTPUT – SHORT-TERM FORECASTS (2017–2018)

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 three quarters of 2016.

In the first three quarters of 2016 construction output in Yorkshire and Humber came in at £7.6bn in current prices, a 5% increase on the same period of 2015. The increase was driven by a gain of 25% in total R&M work, as well as rises of 13% in the private housing sector and 12% in the public non-housing sector. There were heavy declines in the public housing and infrastructure sectors, of 44% and 27% respectively. The industrial sector contracted by 12%, and the commercial sector by 1%.

Between 2017 and 2018 total output is expected to contract at an annual average rate of 0.3%. This compares to a gain of 1.4% at the national level. An expected decline in R&M work of 0.9% drives the fall, while new work output is predicted to plateau. In the new work component, infrastructure and commercial construction output is expected to increase while contractions are forecast for the remaining sectors.

The infrastructure sector is predicted to be the best performer in the short term, predicted to grow at an annual average rate of 1.5% over the next two years. Work on the second phase of the Ferrybridge power station in Knottingley, worth £300m, should contribute to output growth in the short term if work commences this year as expected. In March 2016 construction started on a new £35m biomass power plant near the village of Tasterne, East Yorkshire, with the 22 megawatt plant expected to open in 2017.

In the commercial sector output is expected to grow at a more modest annual average rate of 0.9%. Projects that are expected to support growth include a £300m extension to Meadowhall shopping centre in Sheffield. Sheffield City Council is due to make a planning decision on the 300,000 square foot project imminently. Urbo have also put in a planning application to deliver a £175m West Bar Square scheme in Sheffield city centre. The project will include 700,000 square feet of office space and 500,000 square feet of apartments. In addition, a similar £100m project in Huddersfield named HD One is in the planning stages.

Total output in the private housing sector is expected to level off between 2017 and 2018. Yorkshire and Humber's private housing starts declined by 16%, to 10,310 units in 2015. In the nine months to September this year starts increased by 6% to 8,360 units compared with the same period a year earlier, which is expected to support modest growth in 2017. Sigma Capital and Keepmoat's £800m UK-wide private rented sector programme will see 24 apartments built at Norfolk Park in Sheffield, due for completion in September this year. In 2018 uncertainty

surrounding the Brexit vote and a worsening in economic conditions in 2017 is likely to begin weighing on private housing output growth.

In the public non-housing sector output is predicted to decline by 1.4% a year on average. The University of Leeds' £520m campus redevelopment should support some growth this year. In September last year the green light was given to construction of a new £40m innovation and enterprise centre located close to the city centre. The development should be ready to use by summer 2018. York Hospital NHS Foundation Trust is also planning a £23m development project to extend its Cardiac Catheterisation Laboratory Suite, and build a new endoscopy department. If planning approval is granted work should start by March 2017. In 2018 a dearth of large projects in the pipeline and a lack of government investment are likely to lead to a contraction in output.

The industrial sector is expected to see a more severe decline in output in the short term, forecast at an annual average rate of 2.6% in the 2017–2018 period. In the manufacturing industry, which is a key driver of output growth in the industrial construction sector, there was an estimated contraction of 0.6% in 2016. A mild contraction is also expected for 2017, and growth is predicted to average 0.5% in the 2017–2018 period, as opposed to 1% for the regional economy as a whole. The projected negative impact of the European Union referendum vote on domestic demand is likely to far outweigh any growth in exports due to sterling's depreciation. This weakness is expected to limit construction output growth in the sector. Although the construction of two industrial units in Thorne, Doncaster should add £21m to output this year, there is little of any size in the pipeline beyond this.

The public housing sector in the region had a difficult 2016, with output estimated to have declined by 31%. In the short term it is predicted to be the worst performing sector, forecast to contract at an annual average rate of 3.3% between 2017 and 2018. In 2015 public housing starts in Yorkshire and Humber dropped by 32% to 1,000 units, their lowest level since 2012. In the first nine months of this year they fell by a further 12% compared with the same period a year earlier. This is expected to severely limit output going forward.

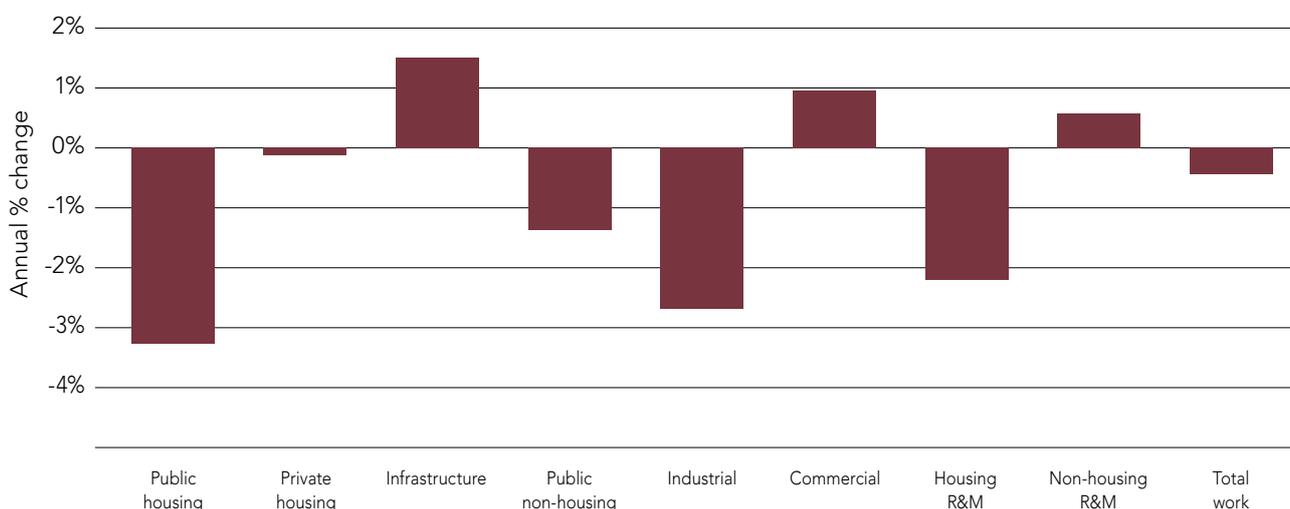
Earlier this year Leeds Federated Housing Association chose Lovell to build 33 new affordable homes in Belle Isle, Leeds. The development should be complete by the end of this year, though this project will add little to output, and there is a dearth of schemes in the pipeline beyond this. Last year the government also announced that from April 2016 housing associations were obliged to cut social housing rents by one percent a year for the next four years. Combined with cuts in government funding, construction output in the sector appears to be set for a period of contraction.

## CONSTRUCTION OUTPUT – YORKSHIRE AND HUMBER (£ MILLION, 2013 PRICES)

	Actual	Forecast annual % change			Annual average
	2015	2016	2017	2018	2017-2018
Public housing	484	-31%	-3%	-4%	-3.3%
Private housing	1,792	8%	1%	-1%	-0.1%
Infrastructure	1,227	-10%	5%	-2%	1.5%
Public non-housing	571	1%	1%	-3%	-1.4%
Industrial	480	-13%	-3%	-3%	-2.6%
Commercial	1,437	-6%	1%	1%	0.9%
<b>New work</b>	<b>5,991</b>	<b>-5%</b>	<b>1%</b>	<b>-1%</b>	<b>0.0%</b>
Housing R&M	1,587	3%	-5%	0%	-2.2%
Non-housing R&M	1,341	10%	-1%	2%	0.6%
<b>Total R&amp;M</b>	<b>2,929</b>	<b>7%</b>	<b>-3%</b>	<b>1%</b>	<b>-0.9%</b>
<b>Total work</b>	<b>8,920</b>	<b>-1%</b>	<b>0%</b>	<b>-1%</b>	<b>-0.3%</b>

Source: Experian.  
Ref: CSN Explained.

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017-2018 – YORKSHIRE AND HUMBER



Source: Experian.  
Ref: CSN Explained.

Long term output growth mainly from the commercial and private housing sectors.

## CONSTRUCTION OUTPUT – LONG-TERM FORECASTS (2017–2021)

In the 2017–2021 period total construction output is expected to grow at an annual average rate of 0.5%. The commercial sector is predicted to expand strongly, while gains are forecast to be weak in most other sectors, and declines are expected in the public housing and infrastructure ones.

The commercial sector is forecast to grow at an annual average rate of 2.5% between 2017 and 2021. The uncertainty surrounding the European Union referendum result is expected to have a relatively larger impact on the commercial sector than some of the other sectors, due in particular to the potential impacts on inward investment. The uncertainties are expected to ease somewhat from 2019, and this should support decent growth in construction output in the sector.

In the private housing and public non-housing sectors construction output is predicted to grow at a more modest 0.5% a year on average in the 2017–2021 period. Housing demand is likely to weaken this year as real income growth slows or declines amidst rising inflation and worsening labour market conditions. These pressures are predicted to ease in the latter part of the forecast period, in which some growth in private housing construction should be seen. In the latter sector the £2bn YORbuild2 framework, which funds public non-housing projects within Yorkshire, Humber, Derbyshire and Nottinghamshire should offer some support to construction output growth. The framework is due to expire at the end of February 2020 with provision for a two year extension.

Average annual construction output of 0.2% is forecast for the industrial sector in the five years to 2021. European Union referendum uncertainty is likely to hit the sector in the short run as business investment suffers. In the long term this should dissipate somewhat and gains of 3% a year are anticipated for 2020 and 2021, as opposed to

losses of a similar magnitude between 2017 and 2018. In the manufacturing industry, a key driver of industrial sector construction, output is expected to grow at an average of 1% in the long term, compared to 0.5% in the shorter time period.

The public housing and infrastructure sectors are expected to perform the worst in the long term. Between 2017 and 2021 construction output in the sectors is forecast to decline at an annual average rate of 2.5% and 0.6% respectively. In the public housing sector the government imposed one percent reduction in housing rents a year will continue to 2020, and given a lack of funding and confirmed projects in the pipeline the sector should continue to struggle. Infrastructure will also be impacted by a lack of funding in the long term although development consent has been given to the Hornsea 2 offshore wind project which will offer some support to output growth out to 2020. The Thorpe Marsh power station redevelopment may also support output gains in the forecast period if it gets the go ahead.

## BEYOND 2020

Major road transport is likely to be an area in which further work will take place post-2020. Highways England's 2015–2020 business plan identifies upgrade work that could be taken forward as part of A57/A628 Trans-Pennine Programme and the A61 duelling in the aftermath of feasibility studies. No dates are currently available for the start of any work on these schemes but they are likely to be post-2020.

Beyond this, High Speed 2, the planned high-speed railway linking London, Birmingham, the East Midlands, Leeds, Sheffield and Manchester could make a significant contribution to infrastructure construction output in the region. The second phase of the project is planned to connect Sheffield and Leeds to Birmingham and London, via upgrades to city centre stations.

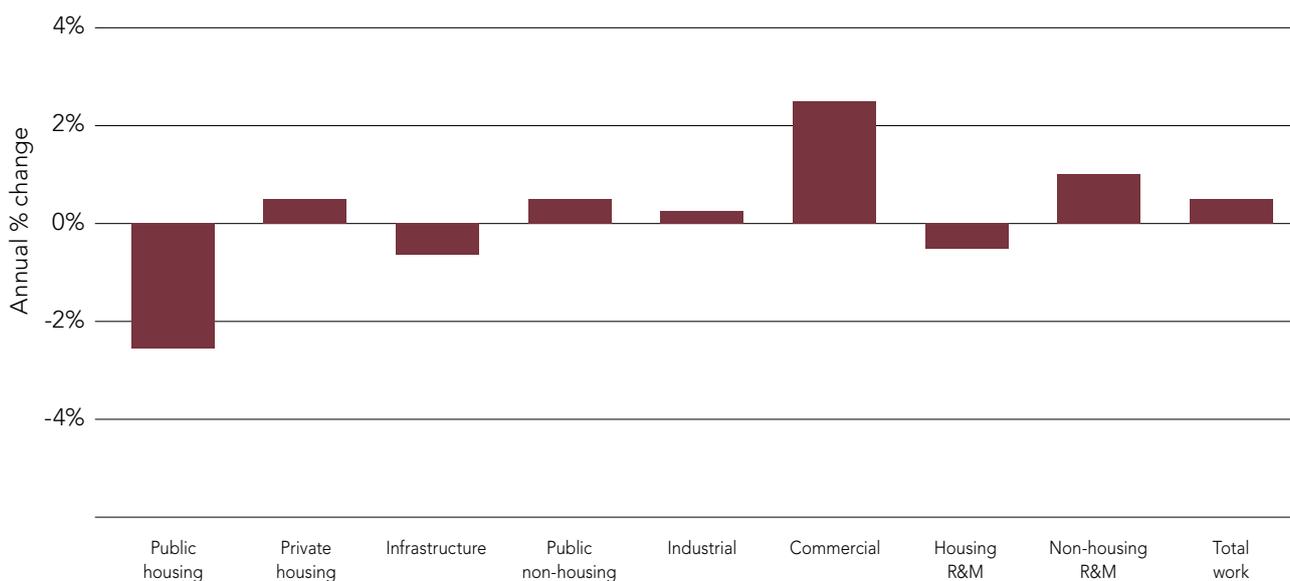


## CONSTRUCTION OUTPUT – YORKSHIRE AND HUMBER (£ MILLION, 2013 PRICES)

	Estimate	Forecast annual % change					Annual average
	2016	2017	2018	2019	2020	2021	2017-2021
Public housing	332	-3%	-4%	3%	-7%	-2%	-2.5%
Private housing	1,940	1%	-1%	0%	0%	3%	0.5%
Infrastructure	1,104	5%	-2%	0%	-2%	-4%	-0.6%
Public non-housing	577	1%	-3%	1%	0%	4%	0.5%
Industrial	418	-3%	-3%	1%	3%	3%	0.2%
Commercial	1,346	1%	1%	4%	4%	2%	2.5%
<b>New work</b>	<b>5,718</b>	<b>1%</b>	<b>-1%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>0.6%</b>
Housing R&M	1,643	-5%	0%	1%	1%	0%	-0.5%
Non-housing R&M	1,477	-1%	2%	1%	2%	1%	1.1%
<b>R&amp;M</b>	<b>3,120</b>	<b>-3%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>0.3%</b>
<b>Total work</b>	<b>8,837</b>	<b>0%</b>	<b>-1%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>0.5%</b>

Source: CSN, Experian.  
Ref: CSN Explained.

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017-2021 – YORKSHIRE AND HUMBER



Source: CSN, Experian.  
Ref: CSN Explained.

# CONSTRUCTION EMPLOYMENT FORECASTS FOR YORKSHIRE AND HUMBER

## TOTAL CONSTRUCTION EMPLOYMENT FORECASTS BY OCCUPATION

The table presents actual construction employment (SICs 41-43, 71.1 and 74.9) in Yorkshire and Humber for 2015, the estimated total employment across 28 occupational categories in 2016 and forecasts for the industry for 2017 to 2021. A full breakdown of occupational groups is provided in Section 5 of CSN Explained.

Total construction employment in Yorkshire and Humber is predicted to remain fairly stable in the five years to 2021. This compares to an increase of 0.6% at the national level. In numbers this represents a slight fall from 199,890 in 2016 to 198,610 in 2021.

Around half of the 28 occupational aggregates are expected to grow in the 2017–2021 period on an annual average measure, while the other half are predicted to contract. The fastest growing occupations are forecast to be construction project managers (2.9%), scaffolders (2.8%), other construction professionals and technical staff (2.7%), labourers (2.5%), and plant operatives and construction trades supervisors (2.4%). Conversely, the largest contractions are forecast for steel erectors/structural fabrication (4.3%), bricklayers (4%), building envelope specialists (3.6%), floorers and specialist building operatives (3.5%).

Overall, the managerial/supervisory and professional occupations are expected to fare rather better than the trades.



## TOTAL EMPLOYMENT BY OCCUPATION – YORKSHIRE AND HUMBER

	Actual	Estimate	Forecast	
	2015	2016	2017	2021
Senior, executive, and business process managers	14,940	15,280	15,280	16,290
Construction project managers	3,010	2,980	3,100	3,440
Other construction process managers	14,530	14,430	14,710	15,970
Non-construction professional, technical, IT, and other office-based staff	25,690	25,890	26,500	28,740
Construction trades supervisors	4,240	4,420	4,540	4,970
Wood trades and interior fit-out	18,670	18,310	17,870	15,990
Bricklayers	6,150	6,130	6,030	4,990
Building envelope specialists	7,360	7,170	7,100	5,980
Painters and decorators	6,450	6,620	6,650	5,750
Plasterers	5,430	5,210	5,230	4,560
Roofers	5,090	4,610	4,830	4,370
Floorers	2,580	2,630	2,590	2,200
Glaziers	2,920	2,810	2,800	2,380
Specialist building operatives nec*	4,020	4,160	4,120	3,480
Scaffolders	2,090	2,270	2,370	2,600
Plant operatives	1,550	1,570	1,610	1,770
Plant mechanics/fitters	3,760	3,710	3,760	3,170
Steel erectors/structural fabrication	2,790	2,780	2,700	2,230
Labourers nec*	8,060	8,040	8,270	9,080
Electrical trades and installation	16,340	15,950	16,200	14,280
Plumbing and HVAC Trades	12,980	12,550	12,650	11,100
Logistics	1,200	1,240	1,240	1,240
Civil engineering operatives nec*	3,300	3,310	3,400	3,460
Non-construction operatives	4,230	4,210	4,280	4,560
Civil engineers	4,240	4,360	4,310	4,410
Other construction professionals and technical staff	11,900	12,270	12,680	14,050
Architects	660	660	650	650
Surveyors	5,930	6,320	6,340	6,900
<b>Total (SIC 41-43)</b>	<b>177,380</b>	<b>176,280</b>	<b>177,830</b>	<b>172,600</b>
<b>Total (SIC 41-43, 71.1, 74.9)</b>	<b>200,110</b>	<b>199,890</b>	<b>201,810</b>	<b>198,610</b>

Source: ONS, CSN, Experian.  
Ref: CSN Explained. \*Not elsewhere classified.

## ANNUAL RECRUITMENT REQUIREMENT (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.

In Yorkshire and Humber the ARR is forecast to be 1,860 between 2017 and 2021. This represents 0.9% of base 2017 employment. In percentage terms generally, the occupations flagged as having a medium or high requirement (greater than 2.6% of base 2017 employment) were the managerial/supervisory and professional type. However, plant operatives are expected to have the highest requirement at 5.6% of base 2017 employment. All other occupations mainly in the trade categories were flagged as having a low requirement (less than 2.5% of base 2017 employment). On an absolute basis, the largest requirements are for non-construction professional, technical, IT, and other office-based staff (380), wood trades and interior fit-out (300), labourers and surveyors (180) and senior, executive, and business process managers (160).

Please note that all of the ARR 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 – YORKSHIRE AND HUMBER

	2017-2021
Senior, executive, and business process managers	160
Construction project managers	90
Other construction process managers	140
Non-construction professional, technical, IT, and other office-based staff	380
Construction trades supervisors	80
Wood trades and interior fit-out	300
Bricklayers	–
Building envelope specialists	–
Painters and decorators	<50
Plasterers	–
Roofers	<50
Floorers	<50
Glaziers	–
Specialist building operatives nec*	–
Scaffolders	50
Plant operatives	90
Plant mechanics/fitters	–
Steel erectors/structural fabrication	–
Labourers nec*	180
Electrical trades and installation	–
Plumbing and HVAC Trades	–
Logistics	50
Civil engineering operatives nec*	–
Civil engineers	60
Other construction professionals and technical staff	–
Architects	–
Surveyors	180
<b>Total (SIC 41-43)</b>	<b>1,620</b>
<b>Total (SIC 41-43, 71.1, 74.9)</b>	<b>1,860</b>

Source: CSN, Experian.  
Ref: CSN Explained. \*Not elsewhere classified.

# COMPARISONS ACROSS THE UK

As is usually the case, the 1.7% annual average output growth rate for the UK as a whole masks considerable differences in the projected rates for individual English regions and the devolved nations, from expansion of over 6% a year on average in Wales to a decline of 0.4% in Scotland on the same measure.

Wales and the South West remain on top of the growth rankings due to the prospective start of new nuclear build at Wylfa Newydd and Hinkley Point respectively in their areas. However, Wales in particular is not necessarily a 'one-hit wonder' with other sizeable projects such as the M4 upgrade around Newport due to start in the forecast period.

The Greater London construction market is more vulnerable than most to a fall in business investment because of the large size of its commercial sector. However, a weak performance here is expected to be more than compensated for by strong growth in infrastructure, driven in part by the start of work on HS2, and private housing, fuelled by strong increases in the capital's population.

The other two regions expected to see annual average output growth in excess of 2% are the North West (2.5%) and the South East (2.2%). Growth in the former will be driven by energy and transport projects, the largest of which is the prospective new nuclear build facility at Moorside. In the latter, new renewable energy facilities should drive growth in the infrastructure sector and the commercial construction sector will benefit from the theme park in north Kent.

For the remainder of the English regions growth is predicted to range between an annual average rate of 1.3% in the West Midlands, which should see some HS2-related work by the end of the forecast period, to a marginal decline of 0.1% in the North East, which will suffer from a dearth of major projects and weak housing demand.

Scotland is projected to be the worst performing of all the regions and devolved nations, with an annual average decline of 0.4%. The primary reason for this is a sharp fall in infrastructure output from its current very high level as a number of large projects, such as the Queensferry Crossing, the M8/M73/M74 motorway upgrade, and the Aberdeen Western Peripheral Route, are completed over the next two years.

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 average employment growth is projected to range from a

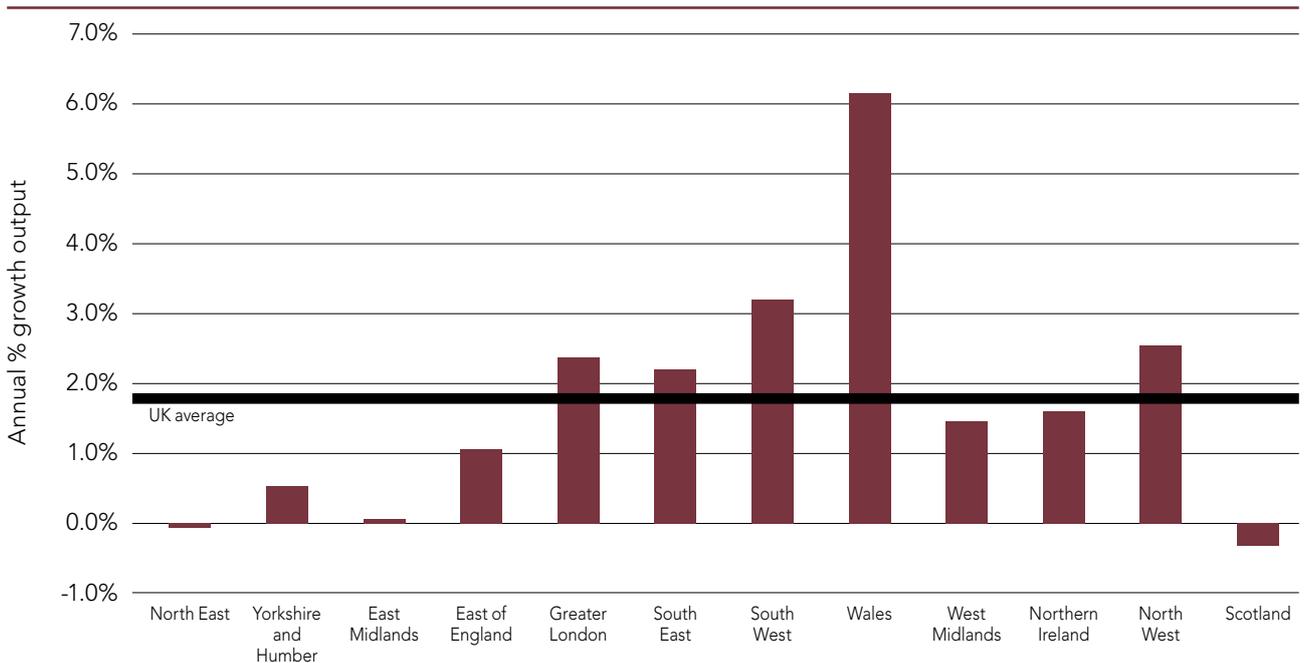
high of 2.7% in Wales to a low of -0.8% in Scotland, against a UK rate of 0.6%.

The impact of new nuclear build on employment in the regions and devolved nations that will host such projects is much less than on output due to its capital rather than labour-intensive nature. However, it still boosts employment growth in Wales quite considerably as it is a very big project in a small market. The impact is smaller in the South West, which has a bigger construction market, and thus contributes less to overall employment growth, which is expected to be around 0.7% a year on average over the five years to 2021.

Output growth in Scotland, the North East, East Midlands, and Yorkshire and Humber will not be strong enough to drive growth in employment; thus, these are all expected to experience some fall in construction employment between 2017 and 2021.

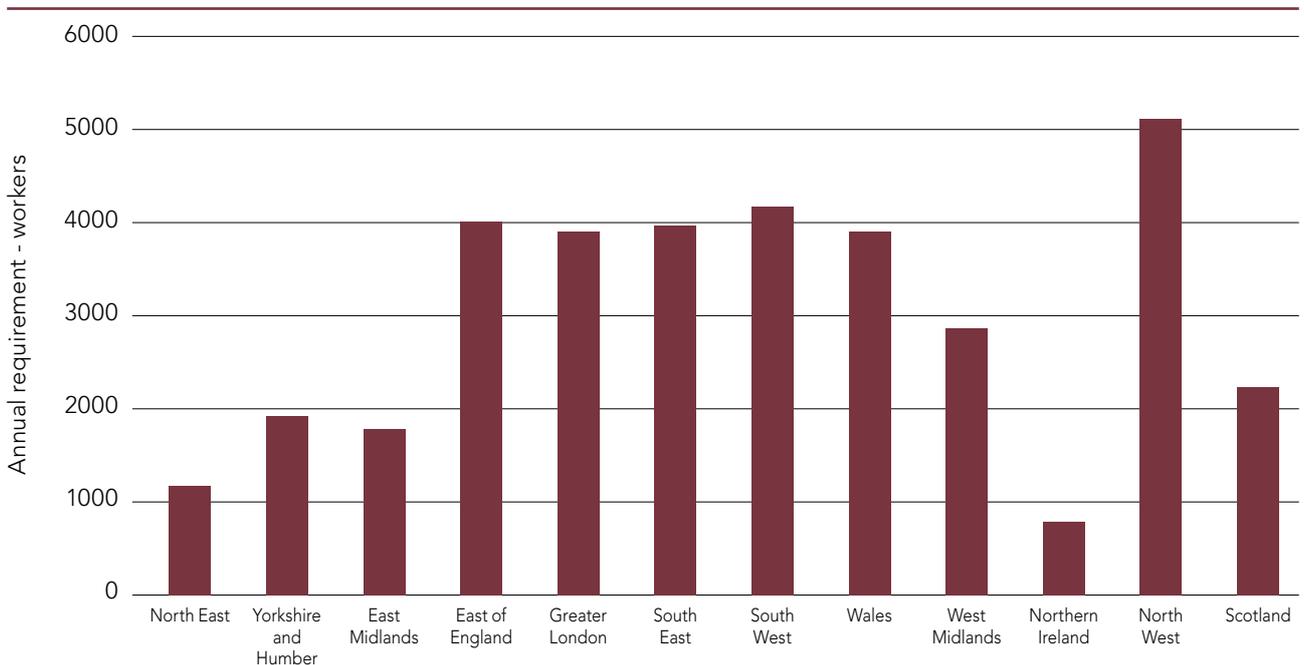
The pattern of annual recruitment requirements can look significantly different to the profile of output and employment, as some regions and devolved nations have historically strong net inflows and some suffer from large net outflows. Thus, Greater London's ARR represents just 0.9% of base 2017 employment, the lowest ratio along with Yorkshire and Humber, despite being high up the rankings in terms of output and employment growth. This is because the capital naturally acts as a magnet for the construction workforce from other parts of the country and from abroad; thus, its additional requirement is relatively small. At the other end of the scale Wales traditionally suffers strong net outflows, in particular to the North West and South West of England and often has the highest ARR ratio as a result of this. The 2017 to 2021 period is no exception, with buoyant output and employment growth and the strong net outflows leading to an ARR ratio of 3.4% of base 2017 employment. The remaining regions and devolved nations have an ARR ratio of between 1% and 1.9% of base 2017 employment.

## ANNUAL AVERAGE OUTPUT GROWTH BY REGION 2017-2021



Source: CSN, Experian.  
Ref: CSN Explained.

## ANNUAL RECRUITMENT REQUIREMENT (ARR) BY REGION 2017-2021



Source: CSN, Experian.

Although employment levels fall slightly between 2017 -2021, still a need to recruit an average of 1,860 new workers per year.

# CSN EXPLAINED

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

**CSN METHODOLOGY** 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.

**GLOSSARY** provides clarification on some of the terms that are used in the reports.

**NOTES** has some further information 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.

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

**OCCUPATIONAL GROUPS** 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.

## CSN METHODOLOGY

### BACKGROUND

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

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 sector bodies, all of whom contribute their local industry knowledge and views on training, skills, recruitment, qualifications and policy. The National Group also includes the same range of representatives and meets twice per year to set the national scheme, 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. 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 on 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:

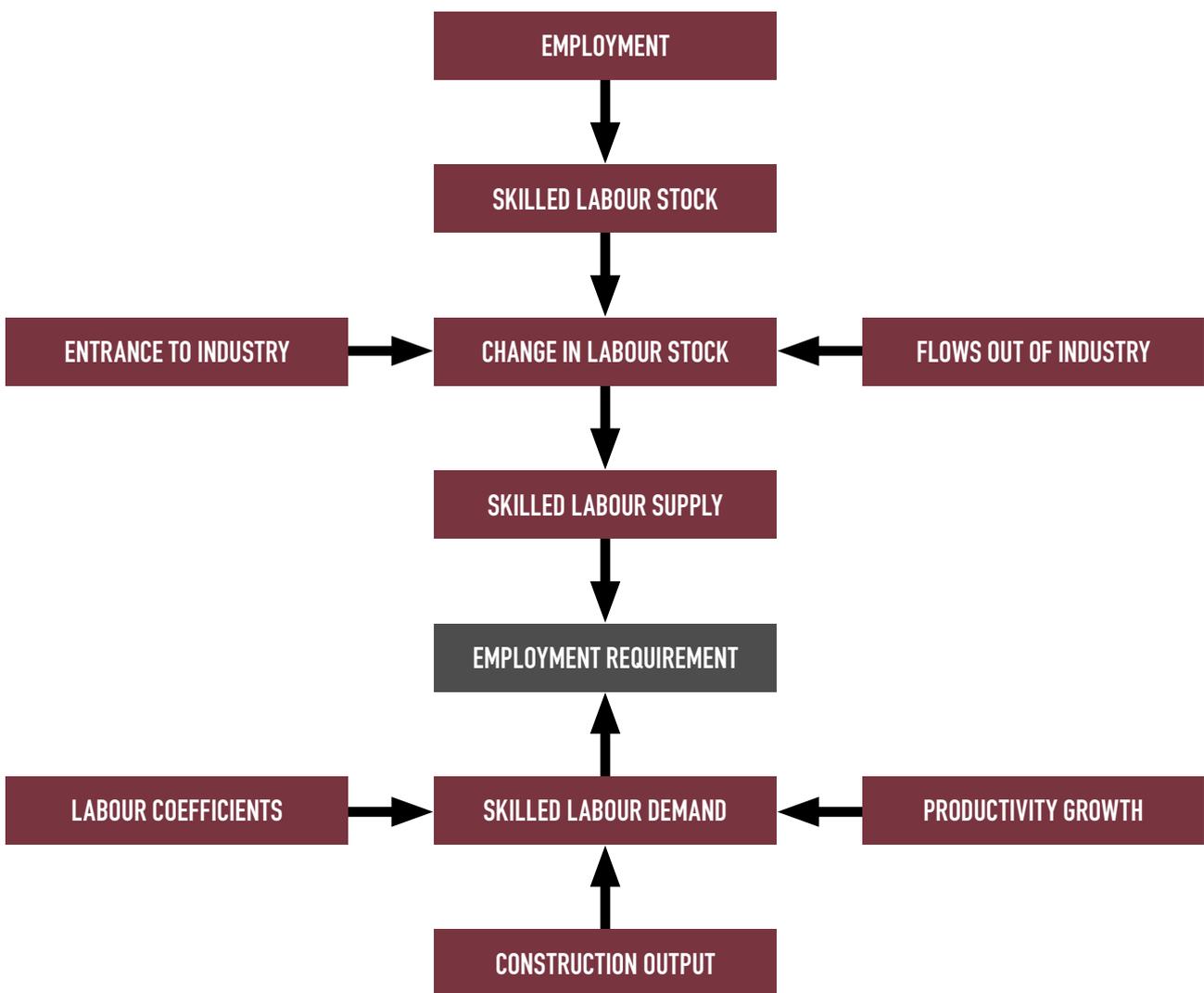
- Transfers to other industries
- International/domestic out migration
- Permanent retirements (including permanent sickness)
- Outflow to temporary sickness and home duties.

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.



# 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.



# NOTES

## 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.
- 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 SIC 41–43 and SIC 41–43, 71.1 and 74.9. The total for SIC 41–43 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 SIC 41–43, 71.1 and 74.9 includes all occupations.



## FOOTPRINTS FOR BUILT ENVIRONMENT SECTOR

CITB and CITB Northern Ireland are 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 CITB and CITB Northern Ireland:

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

The CSN's current baseline forecast assumes that a deal between the UK and EU will be agreed within a 4 year time horizon, with some form of trade access to the single market. As it is unlikely that the trade terms will be as favourable as the current situation, the forecast includes a small downgrade to the UK's long term export and investment projections, compared to the pre-Brexit vote baseline. No adjustments have been made to underlying population projections in the base case as it is too early to assess any potential slowdown in EU migration.

# 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>



<sup>1</sup> 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'.

<sup>2</sup> 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.

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

# 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

### 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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<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		
<b>Logistics</b>			
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	
<b>Civil engineering operatives not elsewhere classified (nec*)</b>			
Road construction operatives		8142	
Rail construction and maintenance operatives		8143	
Quarry workers and related operatives		8123	
<b>Non-construction operatives</b>			
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	
<b>Civil engineers</b>			
Civil engineers		2121	
<b>Other construction professionals and technical staff</b>			
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	
<b>Architects</b>			
Architects		2431	
<b>Surveyors</b>			
Quantity surveyors		2433	
Chartered surveyors		2434	

\*Not elsewhere classified

**For more information about the  
Construction Skills Network, contact:**

Ian Hill

Research Analyst

0300 456 7289

[ian.hill@citb.co.uk](mailto:ian.hill@citb.co.uk)

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