



CITB RESEARCH

# INDUSTRY INSIGHTS

NORTH EAST



Construction  
Skills Network  
Labour Market  
Intelligence  
2018-2022



**About CITB**

CITB is the Industrial Training Board (ITB) for the construction industry in Great Britain (Scotland, England and Wales). CITB uses its research and labour market intelligence to understand the sector's skills needs, and works with industry and government to make sure construction has the right skills, now and for the future.

CITB is modernising its funding approach to invest in areas that will deliver the best returns for industry, and enable the sector to attract and train talented people to build a better Britain.

**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.

CITB is tasked by Government to ensure the UK's construction industry has the skilled workforce it requires. Working with Government, training providers and employers, it is responsible for ensuring that the industry has enough qualified new entrants and that the existing workforce is fully skilled and qualified, as well as for improving the performance of the industry and the companies within it. These materials, together with all of the intellectual property rights contained within them, belong to the Construction Industry Training Board (CITB). Copyright 2018 ("CITB") and should not be copied, reproduced nor passed to a third party without CITB's prior written agreement. These materials are created using data and information provided to CITB and/or EXPERIAN Limited ("Experian") by third parties of which EXPERIAN or CITB are not able to control or verify the accuracy. Accordingly neither EXPERIAN nor CITB give any warranty about the accuracy or fitness for any particular purpose of these materials. Furthermore, these materials do not constitute advice and should not be used as the sole basis for any business decision and as such neither EXPERIAN nor CITB shall be liable for any decisions taken on the basis of the same. You acknowledge that materials which use empirical data and/or statistical data and/or data modelling and/or forecasting techniques to provide indicative and/or predictive data cannot be taken as a guarantee of any particular result or outcome.

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# NORTH EAST

In the five years to 2022 the region's total construction output is expected to decline on average by 0.8% per annum. In contrast, overall UK output is predicted to rise, by an annual average of 1.3%. The North East's construction employment is anticipated to decrease by an average yearly rate of 1.6%, while annual average expansion of 0.5% is likely for the UK. The region's annual recruitment requirement (ARR) is estimated at 840, which represents 0.9% of base 2018 employment, lower than the UK rate of 1.2%.

## KEY FINDINGS

Growth is expected to focus on the industrial sector in the long term, by

**3.3%**

Employment is forecast to decline by

**1.6%**

a year on average

The North East has an ARR of

**840**

Of all regions and devolved nations, the North East's construction industry is the only one projected to decline over the next five years, with annual average falls of 0.8%. The new work sector is forecast to decrease by an average of 1.3% per annum while the repair & maintenance (R&M) sector is likely to fare better with marginal average yearly expansion of 0.2%.

Over both the short and long term the industrial sector is likely to see the biggest average increases per annum. There are several projects in the pipeline that should lead to steady expansion. For example, work on a £70m Teesside mineral refinery should start next year. Minerals would be processed for use in a range of products including automotive parts, mobile phones and wind turbines.

The region's biggest sector, private housing, is projected to see output rise by an annual average of 1% between 2018 and 2022. There are projects expected to take place over the forecast period; however, they are of a small nature. Nonetheless, by 2022 the private housing sector is anticipated to reach a new high of £1.33bn (2015 prices).

An average yearly fall of 5.1% is projected for the infrastructure sector in the five years to 2022. Currently the largest project taking place in the sector is MGT Power's £650m Tees Renewable Energy Plant at Teesport. With no other sizeable schemes planned, infrastructure output is likely to suffer, despite work scheduled over the long term for a raft of small-sized projects.

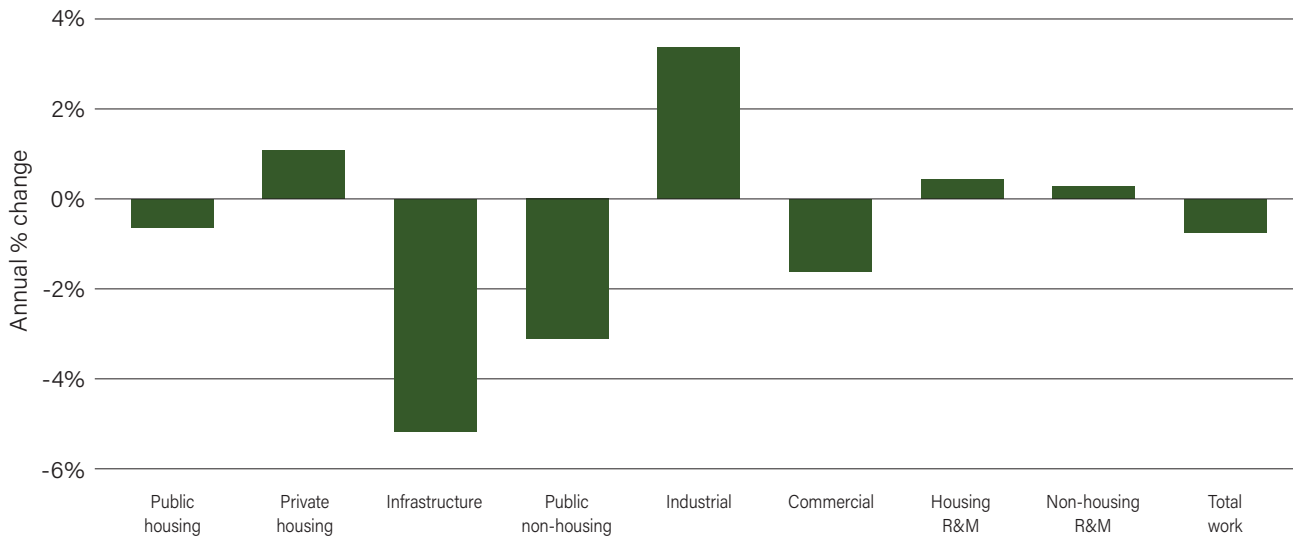
An annual average decrease of 1.5% is predicted for the commercial sector between 2018 and 2022. Uncertain economic times as a result of Brexit have

caused investors and developers to be much more wary in taking forward new projects. This is expected to adversely affect sector output during the near term. As the terms of Brexit become clearer, both consumer and investor confidence should rise. This is then likely to lead to some growth in output over the latter part of the forecast period.

Between 2018 and 2022 the region's construction employment is likely to see average yearly falls of 1.6%. However, not all movements are likely to be in a downward direction, with 10 out of the 28 occupational categories seeing increases over the forecast period. In general, the managerial/administrative and professional occupations are expected to fare better than the trades/manual ones, in line with the UK profile.

With 840 extra recruits required per year over the five years to 2022, the region's ARR is 0.9% of base 2018 employment, lower than the UK rate of 1.2%. Despite the region's low ARR, construction trade supervisors are likely to be under some pressure with an ARR ratio between 2.6% and 5% of base employment.

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2018-2022 - NORTH EAST



Source: CSN, Experian.  
Ref: CSN Explained.

## REGIONAL COMPARISON 2018-2022

	Annual average % change in output	Change in total employment	Total ARR
North East	-0.8%	-7,830	840
Yorkshire and Humber	0.8%	2,100	2,010
East Midlands	0.5%	-2,220	1,720
East of England	1.3%	2,530	4,540
Greater London	1.5%	4,020	2,010
South East	1.1%	16,550	2,250
South West	2.0%	11,520	4,480
Wales	4.6%	12,110	2,450
West Midlands	1.8%	9,660	3,390
Northern Ireland	0.5%	-1,240	310
North West	2.0%	26,720	5,470
Scotland	0.1%	-8,280	2,130
<b>UK</b>	<b>1.3%</b>	<b>31,600</b>	<b>65,640</b>

Source: CSN, Experian  
Ref: CSN Explained.

■ ■ The industrial sector is likely to see the biggest average increases each year. ■ ■

# THE OUTLOOK FOR CONSTRUCTION IN THE NORTH EAST

## CONSTRUCTION OUTPUT IN THE NORTH EAST - OVERVIEW

In 2016 total construction output grew for the fourth year running, but only by 1% to £4.99bn (2015 prices), around 89% of its 2008 peak. While the new work sector edged down by 2%, R&M increased by 12%. Of the new work sectors, industrial output rose by 15% to £267m while expansion of 6% and 4% was posted for the private housing (£1.24bn) and commercial (£756m) ones respectively.

## INDUSTRY STRUCTURE

The diagram, Construction Industry structure 2016 – UK vs. North East, illustrates the sector breakdown of construction in the North East, compared to that in the UK. Effectively, the percentages for each sector illustrate what proportion of total output each sector accounts for.

In 2016 the region's new work sector accounted for 72% of total construction output, much higher than the national share of 64%.

The structure of the North East's construction market is also different from the UK's in other ways. Less emphasis is placed on the region's commercial (15% vs. 19%), housing R&M (14% vs. 19%) and non-housing R&M (14% vs. 17%) sectors. In contrast, more importance is placed on the North East's infrastructure sector with its share 6% higher compared with the UK, at 18%. More emphasis is also placed on the region's private housing output (25% vs. 20%). The size of the North East's public housing and industrial sectors are similar compared with the rest of the country, whereas the share of the public non-housing one is identical to the national average.

## ECONOMIC OVERVIEW

The expected performance of a regional or national economy over the forecast period (2018–2022) provides an indication of the construction sectors in which demand is likely to be strongest.

In 2016 gross value added (GVA) in the North East went up for the seventh successive year, by 0.4% to £48.8bn in 2013 prices. This rate of growth compares very unfavourably with the UK one of 1.8%.

Only two sectors posted growth of over 2%, 2.9% for the wholesale and retail one and 2.6% for finance and insurance. Professional and other private services managed expansion of 1.9%, but the largest sector in the region, public services, contracted by 1%, as did the manufacturing one.

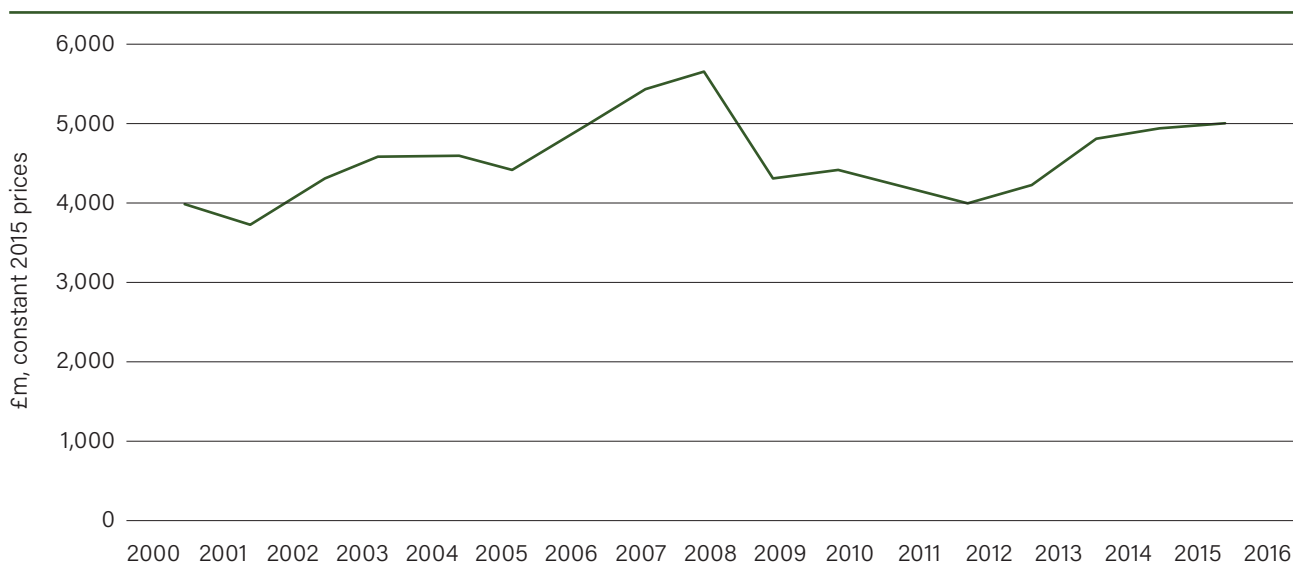
## ECONOMIC STRUCTURE

Public services accounted for the biggest share of GVA, at 24.9% in 2016. Professional and other private services came in second at 22.7%. The manufacturing (14.2%) and wholesale and retail (10.6%) sectors were ranked third and fourth respectively, while at 5.1%, information and communication was the fifth largest industry.

The North East has a higher than average exposure to the manufacturing and public services sectors, which account for 39% of GVA in the region compared with 27% across the UK, while others such as professional and other private services and finance and insurance are underrepresented compared to the UK as a whole. Thus, the North East's economy is weighted towards what are usually relatively slow growing sectors and away from the much more buoyant services ones.

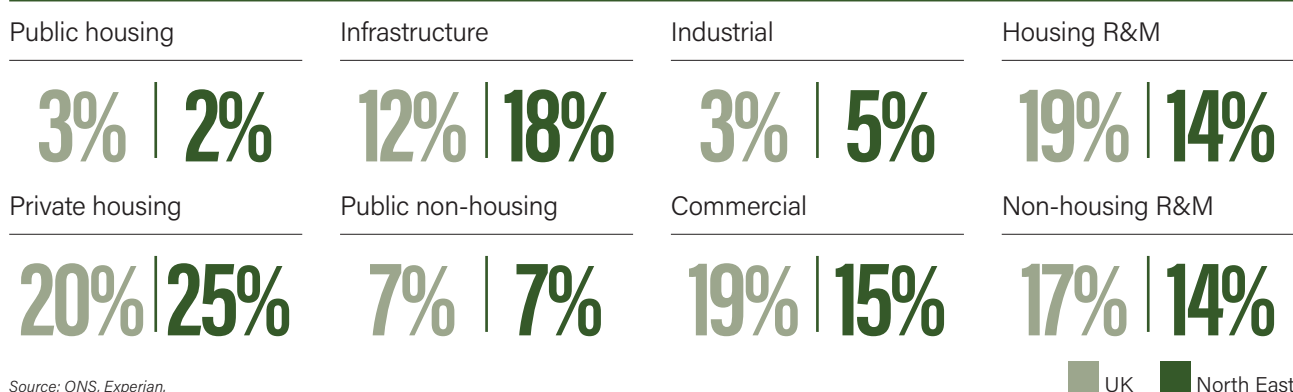


## CONSTRUCTION OUTPUT 2000-2016 - NORTH EAST



Source: ONS.  
Ref: CSN Explained.

## CONSTRUCTION INDUSTRY STRUCTURE 2016 - UK VS NORTH EAST



Source: ONS, Experian.

## ECONOMIC STRUCTURE - NORTH EAST (£ BILLION, 2013 PRICES)

	Actual	Forecast (Annual % change, real terms)					
	2016	2017	2018	2019	2020	2021	2022
Public Services	12.2	1.0	0.8	1.4	1.8	1.9	2.3
Professional & Other Private Services	11.1	2.0	1.3	1.5	1.6	1.8	2.2
Manufacturing	6.9	1.1	1.1	1.5	1.0	1.0	1.3
Wholesale & Retail	5.2	2.2	1.3	1.7	1.9	2.3	2.8
Information & Communication	2.5	1.5	2.0	1.9	1.9	2.2	3.1
<b>Total Gross Value Added (GVA)</b>	<b>48.8</b>	<b>1.5</b>	<b>1.2</b>	<b>1.5</b>	<b>1.6</b>	<b>1.8</b>	<b>2.2</b>

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

## FORWARD LOOKING ECONOMIC INDICATORS

Last year GVA is estimated to have risen for the eighth successive year, by 1.5% to £49.56bn. Over the next five years, the region's GVA is projected to grow at an annual average rate of 1.7%, lower than the national rate of 2%. However, these are better performances than were seen in 2016.

While the woes of the steel industry coupled with a drop in manufacturing output hampered growth in the North East over the course of 2016, uncertainty will be the main obstacle to growth in the near term, particularly given the North East has increased its exporting exposure to the European Union over the past decade, which is now a risk factor as the UK begins to thrash out a trade deal for the post-Brexit world.

The North East's largest sector, public services is predicted to experience average yearly increases of 1.6% between 2018 and 2022. Of the top five sectors, information and communication, the fifth largest one, is likely to see the strongest annual average expansion, of 2.2%.

The sharp fall in the value of sterling directly after the EU Referendum vote has since led to a rising profile of consumer price inflation against a backdrop of low earnings growth. This has put real household disposable incomes under increasing pressure and combined with low levels of savings and a tighter lending regime, has led to a more cautious attitude towards spending by consumers. However, as average earnings growth starts to rise back above inflation from the middle of 2018 and with inflation subsiding towards 2% by 2020, we expect real household disposable incomes in the North East to see stronger increases towards the end of the forecast period. In turn, household spending growth will also be at a higher rate.

The unemployment rate in the North East fell to 7.1% in 2016, but this was still a lot higher than the UK one (4.9%). It is estimated to have dropped further in 2017, to 5.9%, still well above the UK level (4.6%). It is expected to rise slightly again over the next three years, to 6.2%, before subsiding thereafter. This is in line with the UK profile.

## NEW CONSTRUCTION ORDERS - OVERVIEW

In 2016 total orders rose by 6% to £2.65bn (current prices), around 88% of their 2007 peak. Across the new work sectors there was a mixed picture. Orders in the public housing one saw the biggest increase of 85% to £85m while industrial orders experienced a rise of 84% to £350m. The infrastructure sector registered growth of 54% to £1.09bn, a new high. In contrast, the greatest decrease of 50% to £156m was posted in the public non-housing one while a double-digit decline of 30% was seen in the private housing sector (£564m). Commercial orders fell for the third successive year, by 6% to £412m taking them to just 31% of their 2005 peak.

## NEW CONSTRUCTION ORDERS - CURRENT SITUATION

In the first nine months of 2017 total orders increased by 23% to £1.92bn on an annual basis. Private housing orders experienced the greatest jump of 98% to £784m. This is most likely due to contracts that have been let on a large number of small to medium sized schemes. Double-digit expansion of 78% and 77% was also seen in the public non-housing and public housing sectors. While the infrastructure one grew by 5% to £431m, commercial orders edged up by 2% to £339m. The industrial sector registered the only decline of 60% to £116m.



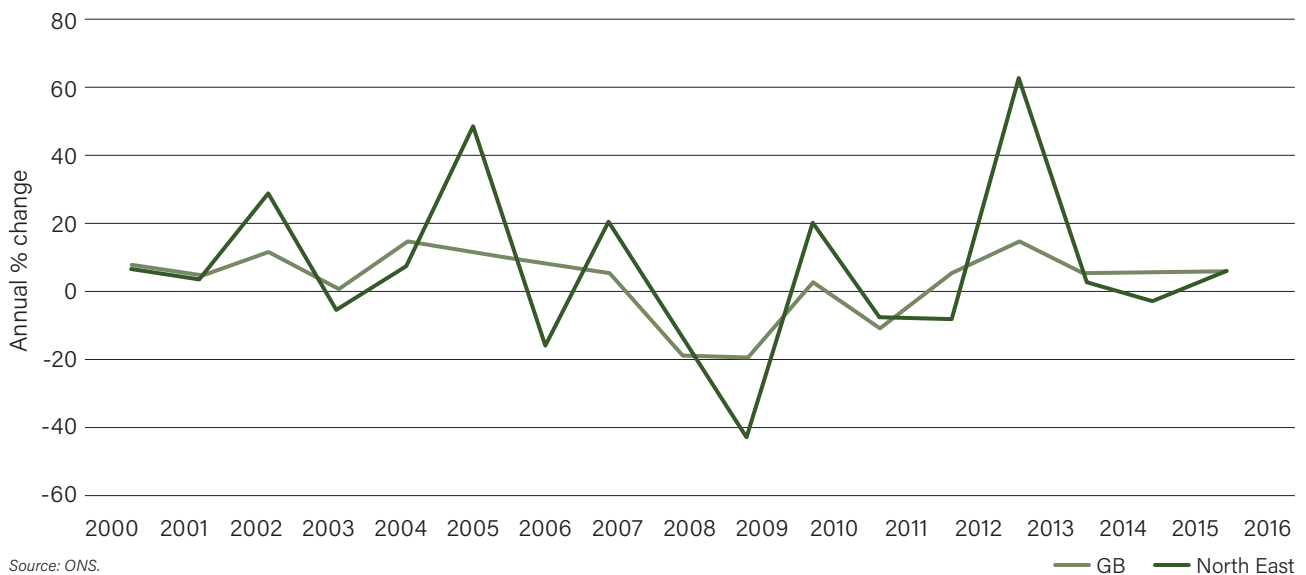


## ECONOMIC INDICATORS - NORTH EAST (£ BILLION, CURRENT PRICES - UNLESS OTHERWISE STATED)

	Actual	Forecast (Annual % change, real terms)					
	2016	2017	2018	2019	2020	2021	2022
Real household disposable income (2013 prices)	42.2	-1.1	0.5	0.9	1.3	1.6	1.9
Household spending (2013 prices)	43.9	1.0	0.4	1.3	1.8	1.8	1.8
Working age population (000s and as % of all)	1,648	62.4%	62.3%	62.3%	62.7%	62.5%	62.3%
House prices (£)	124,417	1.6	1.3	1.6	1.8	2.0	3.4
LFS unemployment (millions)	0.09	-16.8	1.4	2.7	1.4	-1.2	-4.2

Source: ONS, DCLG, Experian.

## NEW CONSTRUCTION ORDERS GROWTH 2000-2016 - NORTH EAST VS GB



Source: ONS.  
Ref: CSN Explained.

## NEW WORK CONSTRUCTION ORDERS - NORTH EAST (£ MILLION, CURRENT PRICES)

	Actual	Annual % change				
	2016	2012	2013	2014	2015	2016
Public housing	85	60.0	825.0	-68.0	-35.2	84.8
Private housing	564	169.8	-13.5	55.4	16.4	-30.4
Infrastructure	1,085	-75.3	384.3	-17.6	26.3	53.7
Public non-housing	156	-30.6	42.4	19.8	-20.3	-50.3
Industrial	350	20.7	32.6	57.8	-48.1	84.2
Commercial	412	3.8	38.0	-17.0	-12.7	-6.4
<b>Total new work</b>	<b>2,652</b>	<b>-8.8</b>	<b>64.7</b>	<b>2.8</b>	<b>-3.2</b>	<b>6.0</b>

Source: ONS.  
Ref: tCSN Explained.

## CONSTRUCTION OUTPUT - SHORT-TERM FORECASTS (2018-2019)

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 2017.

In the first nine months of 2017 total construction output went up by 6% to £4.03bn (current prices) compared with the corresponding period in the preceding year. Of the new work sectors, public housing output saw the largest growth of 91% to £154m while the infrastructure (£840m) one grew by 31%. In contrast, the public non-housing sector experienced the largest fall of 31% to £203m while smaller declines of 19% and 3% were recorded for industrial and private housing output respectively. The commercial sector edged down by 2% to £589m.

In 2017 as a whole, total construction output in the region is estimated to have increased by 5% to £5.24bn in 2015 prices.

Output is expected to fall by an annual average of 1.1% over the next two years. Both the new work (-1.1%) and R&M (-1.2%) sectors are likely to suffer.

An average increase of 1.7% per annum is expected for the public housing sector. Modest expansion is likely due to a number of relatively small developments, including the second phase of Karbon Homes' affordable housing scheme in Chester-Le-Street, which will see 19 new two bedroom homes for rent. This is an addition to the 24 homes that were built during the first phase of the project. In 2017, work started on a new project for Ferryhill and Spennymoor. Around seventy social housing properties are to be built which will range from two to three bedrooms, with completion in 2019.

In 2016 private housing orders declined by 30%, but this decline hasn't fed into output in either 2016 or 2017. Thus, the suspicion is that it will impact output in the short term, so that despite the increase in orders in the first nine months of 2017, private housing output is projected to experience only modest average yearly expansion of 1.2% in the two years to 2019.

The infrastructure sector is predicted to see annual average declines of 1.1% over the short term. The strong growth estimated for 2017 is due to the start of work on MGT Power's £650m Tees Renewable Energy Plant at Teesport, which is one of the largest infrastructure projects the region has seen in a while. However, output on this scheme has probably now plateaued so there is no further contribution to growth. Other smaller schemes in the pipeline include Northumbrian Water's £46m Horsley Water Treatment upgrade. Works in the Tyne Valley are due to complete by December next year.

Industrial output is predicted to grow by an annual average of 2.2% in 2018 and 2019. There are several projects in the pipeline that should lead to moderate growth, for example, funding has been secured to take forward the development of the International Advanced Manufacturing Park on a site just north of Nissan's plant. The development will cost around £92m in total. There is also a Teesside mineral refinery that is planned to take place in 2019. The £70m refinery would process minerals for use in a range of products including mobile phones, wind turbines and automotive parts. An Australian company taking forward the project has said the devaluation of sterling since the EU referendum had made the development more cost-effective.

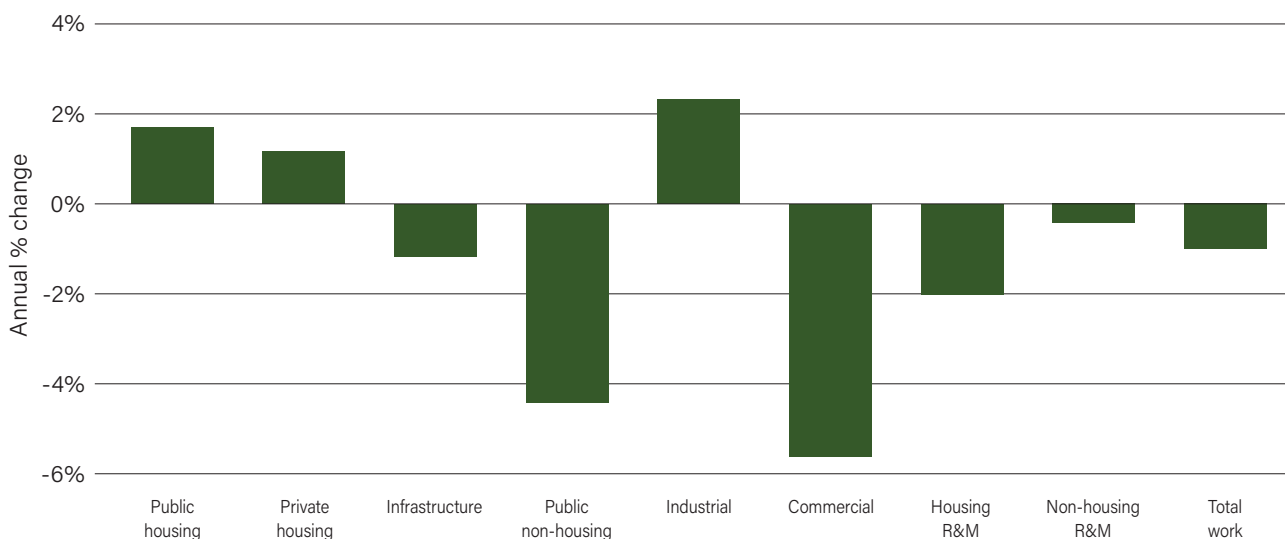
Commercial construction output is likely to see the largest average decline of 5.5% per annum over the next two years. There is a number of small-scale retail-led schemes ongoing or in the pipeline across the region, such as the £10m Northumberland Park in the A19 corridor in north Tyneside, and a new town centre development in Prudhoe, being taken forward by Northumberland Estates. However, due to the small-scale nature of these projects they are unlikely to drive growth in the sector.

## CONSTRUCTION OUTPUT - NORTH EAST (£ MILLION, 2015 PRICES)

	Actual	Forecast (Annual % change)			Annual average
	2016	2017	2018	2019	2018-2019
Public housing	112	36%	3%	1%	1.7%
Private housing	1,240	2%	1%	2%	1.2%
Infrastructure	870	18%	1%	-3%	-1.1%
Public non-housing	352	-13%	-8%	-1%	-4.5%
Industrial	267	-5%	0%	4%	2.2%
Commercial	756	2%	-7%	-4%	-5.5%
<b>New work</b>	<b>3,597</b>	<b>5%</b>	<b>-1%</b>	<b>-1%</b>	<b>-1.1%</b>
Housing R&M	679	7%	-3%	-1%	-2.0%
Non-housing R&M	717	5%	-1%	0%	-0.5%
<b>Total R&amp;M</b>	<b>1,396</b>	<b>6%</b>	<b>-2%</b>	<b>-1%</b>	<b>-1.2%</b>
<b>Total work</b>	<b>4,993</b>	<b>5%</b>	<b>-2%</b>	<b>-1%</b>	<b>-1.1%</b>

Source: Experian.  
Ref: CSN Explained.

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2018-2019 - NORTH EAST



Source: Experian.  
Ref: CSN Explained.

■ The region's annual recruitment requirement (ARR) is estimated at 840. ■

## CONSTRUCTION OUTPUT - LONG-TERM FORECASTS (2018-2022)

The North East construction industry is likely to see an annual average fall of 0.8% in output over the next 5 years. Of the new work sectors, only the industrial and private housing ones are likely to see annual average growth over the forecast period.

Private housing output in the region is predicted to grow on average by 1% per annum over the longer term, below the UK rate of 2.2%. The North East doesn't experience the demographic pressures that other regions, such as Greater London, do, ultimately leading to lower investment in private housing in the region. However, there is a number of small projects in the pipeline. In July, the green light was given for 116 new homes in Seaham, County Durham. Once complete there will be a mixture of two, three and four bedroom homes. Plans have been submitted for a 17-storey residential tower in Gateshead. Construction is expected to begin early this year, with completion in August 2019.

Infrastructure output is likely to decline by an annual average of 5.1% over the next five years. As previously mentioned, MGT Power's £650m Tees Renewable Energy Plant is currently the largest development on site. With nothing else of this size in the pipeline, moderate falls in output are expected despite work due to start on smaller schemes. Two projects in Northumberland are planned for the A1 with a total value of £290m. Design options are being developed for the work north of Ellingham, due to start in 2018. The main dualling between Morpeth and Ellingham will not start until 2020.

An average decline of 3.3% is projected for the public non-housing sector. There are university schemes in the pipeline, but these tend to run over a long timeframe, therefore any effect on growth is diluted. Work has begun on Newcastle University's £34m Learning and Teaching Centre at Newcastle Science Central. Once complete in September 2019, the new building will provide a 722-seat auditorium and a 200-seat lecture theatre. The facility will also provide a café and social learning and exhibition space. Overall, the £350m Newcastle Science Central project will span over 24 acres of prime city centre land. Durham University's £85m student accommodation project is due to start in March. Two new residential blocks will be built which will have the capacity for around 1,000 bed spaces. A new university hub will also be built on the same site, providing student facilities and administrative space.

The industrial sector is predicted to see the highest annual average expansion rate of 3.3% in the five years to 2022. The North East's manufacturing sector is predicted to grow by average yearly increases of 1.2% over the next five years. By the end of the forecast period output in the region's manufacturing sector is likely to be just short of its 2007 peak. The North East's transport and storage sector is expected to experience annual average growth of 1.8% over the forecast period. By 2022 output in the sector is likely to be at a new high suggesting there should be some demand for warehouses over the long term.

Output in the region's commercial sector is predicted to see modest annual average falls of 1.5% over the five years to 2022. As the terms of Brexit become clearer, confidence should increase in the economy. This in turn is likely to lead to growth in commercial output from 2021. Office, retail and leisure construction are driven in the main by the wider economic environment, corporate profitability and levels of consumer confidence and spending. Growth in the region's professional and other private services sector is a good indicator of demand for office premises whilst expansion of the wholesale and retail sector is indicative of demand for retail facilities. While the former is likely to grow by an annual average of 1.7% over the next five years, the latter is likely to rise by a yearly average of 2%.

That is not to say that there aren't projects in the pipeline, but many are relatively small. The largest is the proposed £200m regional arena and conference and exhibition centre on Gateshead riverfront for which a planning application is due to be submitted by the end of this year. The 10-acre site will also include restaurants, hotels and bars.

As is the case for the UK, the relationship between disposable income, consumer spending and housing R&M expenditure seems to have broken in North East in 2017, with output estimated to have grown by 7% in real terms despite downward pressures on disposable incomes and consumer spending growth. It may be that a quieter housing market, in which UK housing transactions have stalled at around 1.2 million for the past four years, is leading to home owners spending more on significant improvements to their properties rather than trading up. However, some downward adjustment to housing R&M expenditure is expected over the next two years as a delayed reaction to the weaker consumer environment.

## BEYOND 2022

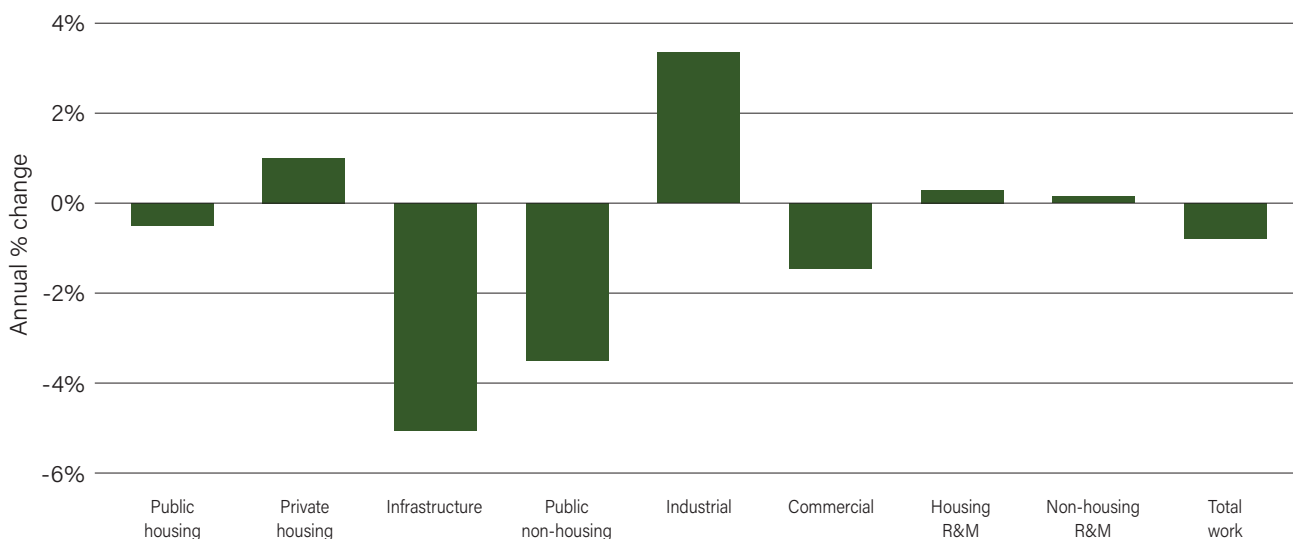
According to the Highway's Agency, improvements to the A1 at Birtley to Coal House are scheduled to begin in 2020/21. It is possible work on this scheme will continue beyond 2022. Once complete, it is hoped the road improvements will help to alleviate congestion. As part of the project, work to replace the nearly 40-year-old Allerdene railway bridge will also take place. Currently it requires regular maintenance, disrupting traffic.

## CONSTRUCTION OUTPUT - NORTH EAST (£ MILLION, 2015 PRICES)

	Estimate	Forecast (Annual % change)					Annual average
	2017	2018	2019	2020	2021	2022	2018-2022
Public housing	152	3%	1%	-7%	-1%	3%	-0.5%
Private housing	1,264	1%	2%	1%	0%	2%	1.0%
Infrastructure	1,023	1%	-3%	-16%	-1%	-5%	-5.1%
Public non-housing	305	-8%	-1%	-6%	0%	-1%	-3.3%
Industrial	252	0%	4%	4%	5%	4%	3.3%
Commercial	769	-7%	-4%	-1%	2%	3%	-1.5%
<b>New work</b>	<b>3,766</b>	<b>-1%</b>	<b>-1%</b>	<b>-5%</b>	<b>0%</b>	<b>1%</b>	<b>-1.3%</b>
Housing R&M	724	-3%	-1%	2%	1%	3%	0.3%
Non-housing R&M	751	-1%	0%	1%	0%	1%	0.2%
<b>Total R&amp;M</b>	<b>1,475</b>	<b>-2%</b>	<b>-1%</b>	<b>1%</b>	<b>1%</b>	<b>2%</b>	<b>0.2%</b>
<b>Total work</b>	<b>5,241</b>	<b>-2%</b>	<b>-1%</b>	<b>-3%</b>	<b>0%</b>	<b>1%</b>	<b>-0.8%</b>

Source: CSN, Experian.  
Ref: CSN Explained.

## ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2018-2022 - NORTH EAST



Source: Experian.  
Ref: CSN Explained.

# CONSTRUCTION EMPLOYMENT FORECASTS FOR THE NORTH EAST

## TOTAL CONSTRUCTION EMPLOYMENT FORECASTS BY OCCUPATION

The table presents actual construction employment (SICs 41-43, 71.1, and 74.9) in the North East for 2016, the estimated total employment across 28 occupational categories in 2017 and forecasts for the industry for 2018 to 2022. A full breakdown of occupational groups is provided in the CSN Explained section.

At 95,950, the region accounted for 3.6% of total UK construction employment in 2016. Employment is estimated to have grown by around 3.6% in 2017, buoyed by a fifth consecutive year of output growth. However, over the next five years construction employment in the North East is projected to see an annual average fall of 1.6% as expansion in the construction industry in the region stalls.

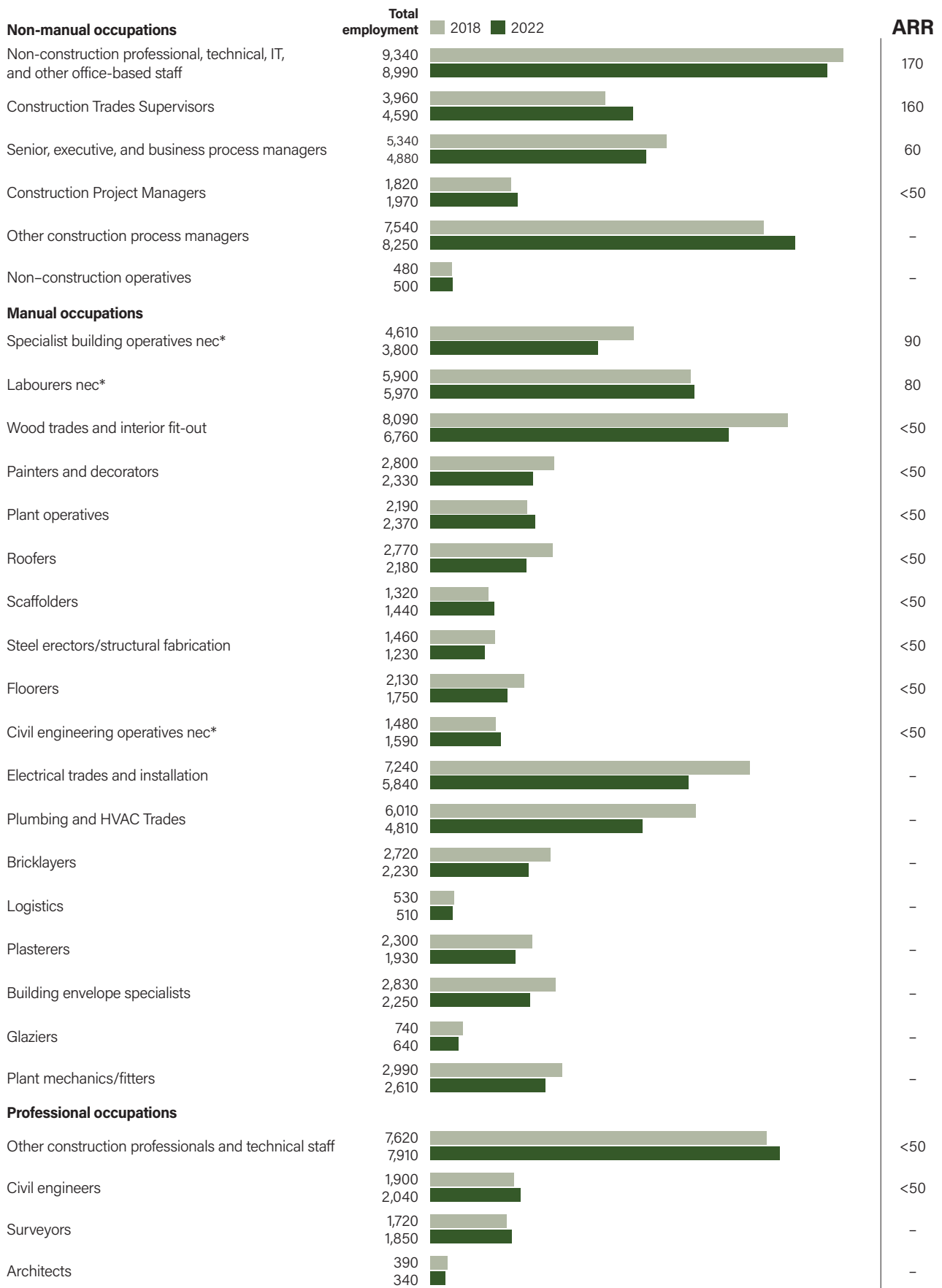
However, the contraction is not universal, with 10 of the 28 occupational categories projected to see employment rises and 18 falls. In general, the managerial/administrative and professional occupations are expected to fare better than the trades/manual ones, in line with the UK profile. Construction trade supervisors are predicted to experience the highest average yearly expansion, of 2.9%, in the five years to 2022, while roofers are expected to see the strongest annual average decrease of 4.8%. Total employment in the North East in 2022 is expected to be 18% below its 2008 peak.

In 2022, wood trades and interior fit out and labourers nec are both expected to account for around 7% of the total North East workforce, the largest shares for a construction specific trade. By the end of the forecast period, while the former occupation is likely to be around 82% of its 2017 peak, the latter is projected to be approximately 78% of its 2009 peak.



## TOTAL EMPLOYMENT BY OCCUPATION - NORTH EAST

### Annual recruitment requirement (ARR) by occupation



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

## ANNUAL RECRUITMENT REQUIREMENTS (ARR) BY OCCUPATION

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

At 840, the North East's annual average recruitment requirement, represents 0.9% of base 2018 employment. The corresponding ARR rate for the UK is higher at 1.2%. However, despite having a low ARR the region still needs to recruit around 4,200 new entrants in the next five years, over and above normal flows. The region suffers from significant net outflows of the construction workforce which keeps the ARR ratio close to the UK one despite the difference in employment growth rates.

With an ARR ratio to base 2018 employment of between 2.6% and 5%, construction trade supervisors are likely to be under some pressure. However, we can only say that this might be an indication of future skills shortages as inflows from training in the model are set to zero. There is ongoing research trying to scope out the number of new entrants to the industry from training and it is hoped in the future to be able to turn this 'switch' on.

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

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





## ANNUAL RECRUITMENT REQUIREMENT BY OCCUPATION - NORTH EAST

2018-2022

	2018-2022
<b>Non-manual occupations</b>	
Non-construction professional, technical, IT, and other office-based staff	170
Other construction process managers	-
Senior, executive, and business process managers	60
Construction trades supervisors	160
Construction project managers	<50
<b>Manual occupations</b>	
Wood trades and interior fit-out	<50
Labourers nec*	80
Electrical trades and installation	-
Painters and decorators	<50
Plumbing and HVAC Trades	-
Bricklayers	-
Plant operatives	<50
Logistics	-
Plasterers	-
Roofers	<50
Scaffolders	<50
Specialist building operatives nec*	90
Building envelope specialists	-
Steel erectors/structural fabrication	<50
Glaziers	-
Plant mechanics/fitters	-
Floorers	<50
Civil engineering operatives nec*	<50
<b>Professional occupations</b>	
Other construction professionals and technical staff	<50
Civil engineers	<50
Surveyors	-
Architects	-
<b>Total (SIC 41-43)</b>	<b>780</b>
<b>Total (SIC 41-43, 71.1, 74.9)</b>	<b>840</b>

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

# COMPARISONS ACROSS THE UK

It remains the case that the strongest economic growth will be in the south-east corner of England – Greater London, the South East and the East of England – which are the only three regions projected to see higher GVA growth than the UK rate of 2% a year on average to 2022.

The picture is more mixed across the regions and devolved nations in construction terms, although generally overall economic performance tends to drive stronger construction growth in the south-east corner of England, except where major infrastructure schemes have an impact.

Construction output growth is projected to be strongest in Wales, averaging 4.6% a year over the 2018 to 2022 period. The Welsh construction market is the third smallest in the UK, at an estimated £5.7bn (2015 prices) in 2017, thus the start of work on the Wylfa nuclear power station will have a major impact on output levels in the devolved nation. However, growth is not entirely reliant on this project, with others, such as the M4 upgrade around Newport and the commitment to build 20,000 new affordable homes by 2020/21 making significant contributions.

Construction output in Scotland is likely to remain largely static over the 2018 to 2022 period as further falls in infrastructure output from its very high peak in 2015 is counteracted by good growth in the housing sectors, with Scotland's target for affordable homes set at 50,000. The new Queensferry Crossing is now complete, as are the major motorway upgrades, with the Aberdeen Western Peripheral Route due to finish by spring 2018. There are other sizeable infrastructure projects ongoing, such as the dualling of the A9 between Perth and Inverness, but work on these will be spread over a long time period, thus their impact on growth is diluted.

Northern Ireland has experienced something of a boom in commercial construction activity over the past few years, driven in large part by a substantial expansion of hotel provision in Belfast. However, this may be slackening, while the current political impasse in the devolved nation is likely to impact negatively the timing of new infrastructure and other public projects, leading to relatively modest total output growth of 0.5% a year.

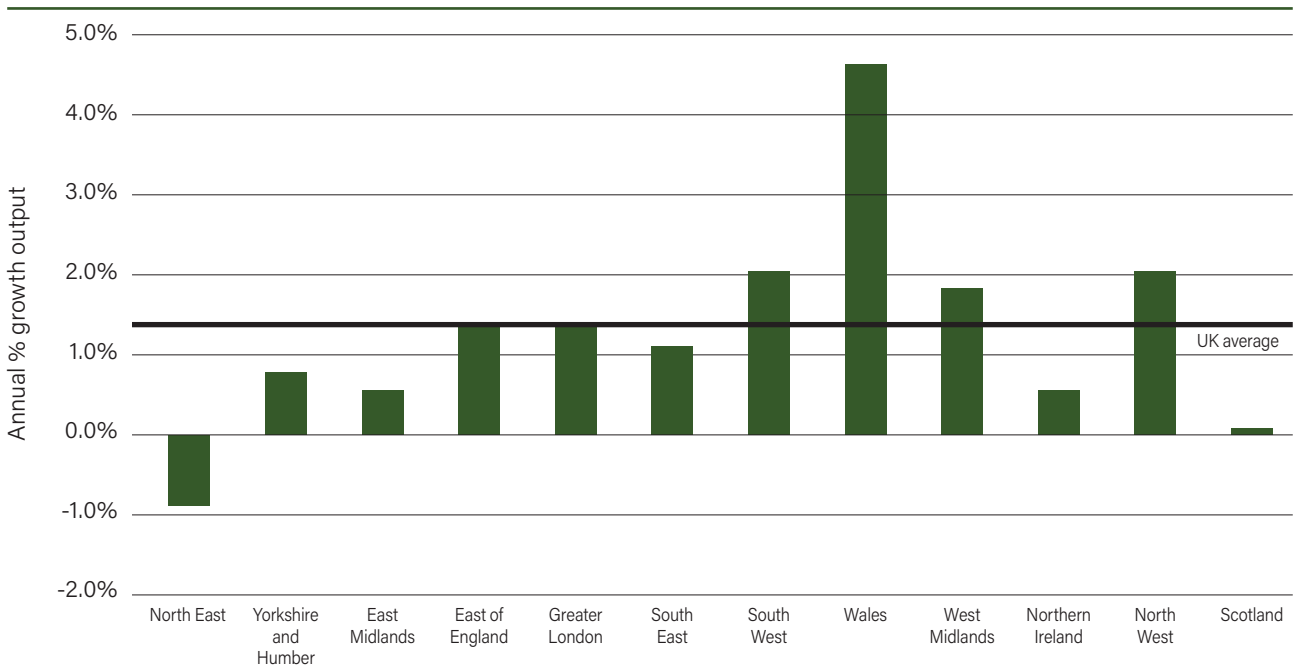
It is the case across the English regions that growth in the construction sector will tend to reflect expansion in the wider economy, unless the region benefits from the siting of major infrastructure projects. Both the South West and North West, which lead the English region growth rankings with 2% a year on average, will benefit from new nuclear build, at Hinkley Point in the case of the former and Moorside in the case of the latter. Enabling works at Hinkley Point have been ongoing for some time while some work at Moorside is projected to begin in 2022. London, and the East Midlands and West Midlands will also see good growth in infrastructure activity as work on High Speed 2 builds up over the forecast period. The strong infrastructure growth in the West Midlands should enable it to experience annual average expansion in total construction output of 1.8%, just behind the South West and North West.

London only manages average yearly growth of 1.5%, as while it benefits from strong infrastructure growth and above average expansion in the housing sectors, commercial construction in the capital is the most vulnerable to a more cautious attitude from investors and developers due to Brexit uncertainty.

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 2.1% in Wales to a low of -1.6% in the North East, against a UK rate of 0.5%.

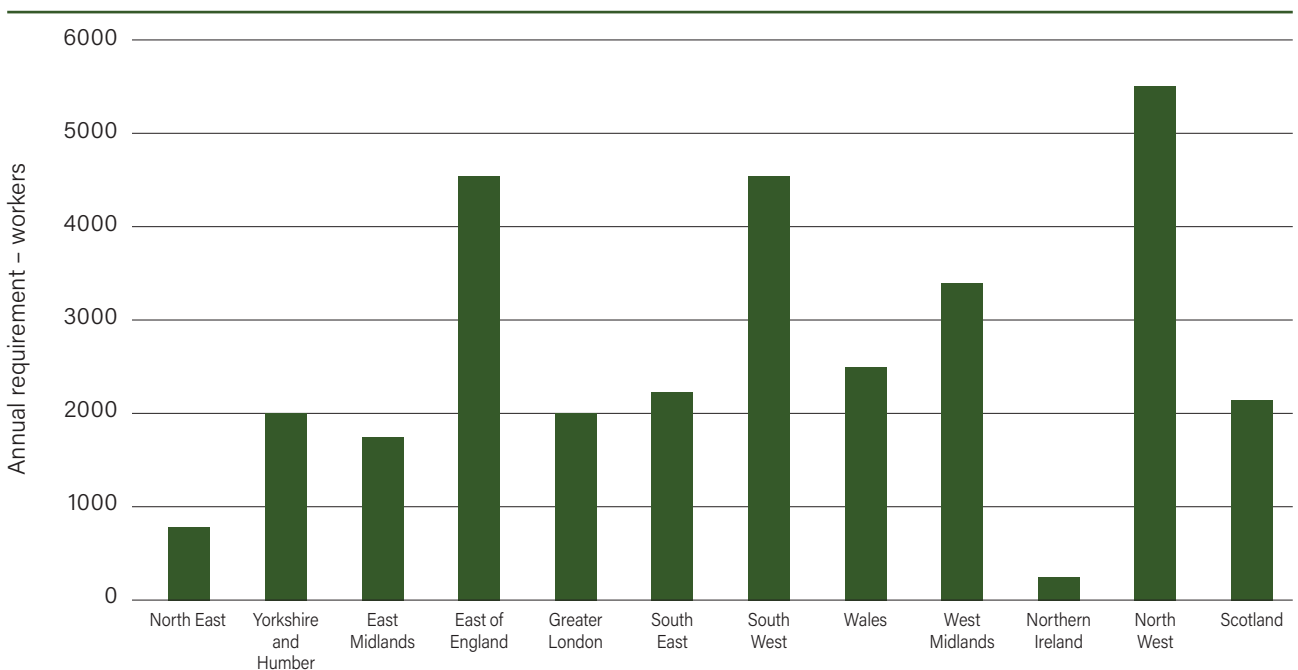
As the annual recruitment requirement (ARR) takes into account known supply-side factors, such as intra-regional labour movements and movements between other industries and construction, the pattern can look significantly different to the profile of output and employment, as some regions and devolved nations have historically strong net inflows and some suffer from large net outflows. For the 2018 to 2022 period, the largest absolute ARR's are for the North West (5,470), the East of England (4,540) and the South West (4,480). However, relative to base employment, Wales has the largest ARR (2.2%), followed by the South West and North West (1.9%). London is the biggest region for construction employment, but has a relatively low ARR at 2,010, just 0.5% of base 2018 employment, as the capital tends to act as a magnet for the workforce from other regions and internationally anyway.

## ANNUAL AVERAGE OUTPUT GROWTH BY REGION 2018-2022



Source: CSN, Experian.  
Ref: CSN Explained.

## ANNUAL RECRUITMENT REQUIREMENT (ARR) BY REGION 2018-2022



Source: CSN, Experian.

Of all regions and devolved nations, the North East's construction industry is the only one projected to decline over the next five years.

# 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 of 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 that lie with a Sector Skills Council (SSC) or Sector Bodies.

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

**OCCUPATION 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 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:

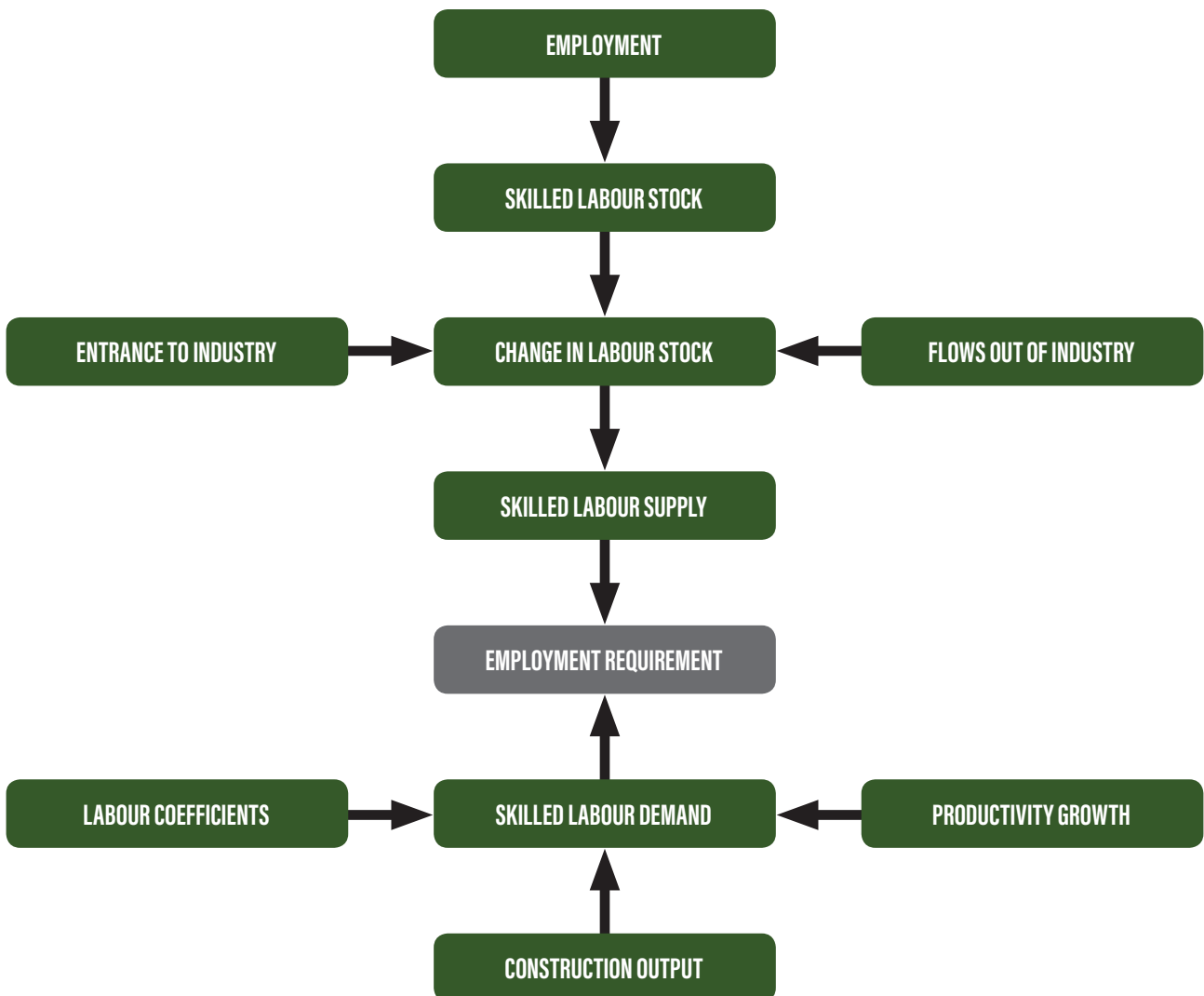
- Transfers to other industries
- International/domestic out migration
- Permanent retirements (Including permanent sickness)
- Outflow to temporary sickness and home duties.

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 flowchart.



# 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.  $GDP = GVA \text{ plus taxes on products minus subsidies on products}$ .

**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. 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 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 THE 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
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 CSN's current baseline forecast assumes that a deal between the UK and EU will be agreed within a four 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

<b>Occupational group</b>			
Description, SOC (2010) reference.			
<b>Senior, executive, and business process managers</b>			
Chief executives and senior officials	1115	Management consultants and business analysts	2423
Financial managers and directors	1131	Receptionists	4216
Marketing and sales directors	1132	Typists and related keyboard occupations	4217
Purchasing managers and directors	1133	Business sales executives	3542
Human resource managers and directors	1135	Bookkeepers, payroll managers and wages clerks	4122
Property, housing and estate managers	1251	Records clerks and assistants	4131
Information technology and telecommunications directors	1136	Stock control clerks and assistants	4133
Research and development managers	2150	Telephonists	7213
Managers and directors in storage and warehousing	1162	Communication operators	7214
Managers and proprietors in other services nec*	1259	Personal assistants and other secretaries	4215
Functional managers and directors nec*	1139	Sales and retail assistants	7111
IT specialist managers	2133	Telephone salespersons	7113
IT project and programme managers	2134	Buyers and procurement officers	3541
Financial accounts managers	3538	Human resources and industrial relations officers	3562
Sales accounts and business development managers	3545	Credit controllers	4121
<b>Construction project managers</b>		Company secretaries	4214
Construction project managers and related professionals	2436	Sales related occupations nec*	7129
<b>Other construction process managers</b>		Call and contact centre occupations	7211
Production managers and directors in manufacturing	1121	Customer service occupations nec*	7219
Production managers and directors in construction	1122	Elementary administration occupations nec*	9219
Managers and directors in transport and distribution	1161	Chemical scientists	2111
Waste disposal and environmental services managers	1255	Biological scientists and biochemists	2112
Health and safety officers	3567	Physical scientists	2113
Conservation and environmental associate professionals	3550	Laboratory technicians	3111
<b>Non-construction professional, technical, IT, and other office-based staff (excl. managers)</b>		Graphic designers	3421
IT operations technicians	3131	Environmental health professionals	2463
IT user support technicians	3132	IT business analysts, architects and systems designers	2135
Finance and investment analysts and advisers	3534	Conservation professionals	2141
Taxation experts	3535	Environment professionals	2142
Financial and accounting technicians	3537	Actuaries, economists and statisticians	2425
Vocational and industrial trainers and instructors	3563	Business and related research professionals	2426
Business and related associate professionals nec*	3539	Finance officers	4124
Legal associate professionals	3520	Financial administrative occupations nec*	4129
Inspectors of standards and regulations	3565	Human resources administrative occupations	4138
Programmers and software development professionals	2136	Sales administrators	4151
Information technology and telecommunications professionals nec*	2139	Other administrative occupations nec*	4159
Estate agents and auctioneers	3544	Office supervisors	4162
Solicitors	2413	Sales supervisors	7130
Legal professionals nec*	2419	Customer service managers and supervisors	7220
Chartered and certified accountants	2421	Office managers	4161
Business and financial project management professionals	2424	<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>		Air-conditioning and refrigeration engineers	5225
Bricklayers and masons	5312	<b>Logistics</b>	
<b>Building envelope specialists</b>		Large goods vehicle drivers	8211
Construction and building trades nec* (50%)	5319	Van drivers	8212
<b>Painters and decorators</b>		Elementary storage occupations	9260
Painters and decorators	5323	Buyers and purchasing officers (50%)	3541
Construction and building trades nec* (5%)	5319	Transport and distribution clerks and assistants	4134
<b>Plasterers</b>		<b>Civil engineering operatives not elsewhere classified (nec*)</b>	
Plasterers	5321	Road construction operatives	8142
<b>Roofers</b>		Rail construction and maintenance operatives	8143
Roofers, roof tilers and slaters	5313	Quarry workers and related operatives	8123
<b>Floorers</b>		<b>Non-construction operatives</b>	
Floorers and wall tilers	5322	Metal making and treating process operatives	8117
<b>Glaziers</b>		Process operatives nec*	8119
Glaziers, window fabricators and fitters	5316	Metalworking machine operatives	8125
Construction and building trades nec* (5%)	5319	Water and sewerage plant operatives	8126
<b>Specialist building operatives not elsewhere classified (nec*)</b>		Assemblers (vehicles and metal goods)	8132
Construction operatives nec* (100%)	8149	Routine inspectors and testers	8133
Construction and building trades nec* (5%)	5319	Assemblers and routine operatives nec*	8139
Industrial cleaning process occupations	9132	Elementary security occupations nec*	9249
Other skilled trades nec*	5449	Cleaners and domestics*	9233
<b>Scaffolders</b>		Street cleaners	9232
Scaffolders, staggers and riggers	8141	Gardeners and landscape gardeners	5113
<b>Plant operatives</b>		Caretakers	6232
Crane drivers	8221	Security guards and related occupations	9241
Plant and machine operatives nec*	8129	Protective service associate professionals nec*	3319
Fork-lift truck drivers	8222	<b>Civil engineers</b>	
Mobile machine drivers and operatives nec*	8229	Civil engineers	2121
<b>Plant mechanics/fitters</b>		<b>Other construction professionals and technical staff</b>	
Metalworking production and maintenance fitters	5223	Mechanical engineers	2122
Precision instrument makers and repairers	5224	Electrical engineers	2123
Vehicle technicians, mechanics and electricians	5231	Design and development engineers	2126
Elementary process plant occupations nec*	9139	Production and process engineers	2127
Tool makers, tool fitters and markers-out	5222	Quality control and planning engineers	2461
Vehicle body builders and repairers	5232	Engineering professionals nec*	2129
<b>Steel erectors/structural fabrication</b>		Electrical and electronics technicians	3112
Steel erectors	5311	Engineering technicians	3113
Welding trades	5215	Building and civil engineering technicians	3114
Metal plate workers and riveters	5214	Science, engineering and production technicians nec*	3119
Construction and building trades nec* (5%)	5319	Architectural and town planning technicians*	3121
Smiths and forge workers	5211	Draughtspersons	3122
Metal machining setters and setter-operators	5221	Quality assurance technicians	3115
<b>Labourers nec*</b>		Town planning officers	2432
Elementary construction occupations (100%)	9120	Electronics engineers	2124
<b>Electrical trades and installation</b>		Chartered architectural technologists	2435
Electricians and electrical fitters	5241	Estimators, valuers and assessors	3531
Electrical and electronic trades nec*	5249	Planning, process and production technicians	3116
Telecommunications engineers	5242	<b>Architects</b>	
<b>Plumbing and heating, ventilation, and air conditioning trades</b>		Architects	2431
Plumbers and heating and ventilating engineers	5314	<b>Surveyors</b>	
Pipe fitters	5216	Quantity surveyors	2433
Construction and building trades nec* (5%)	5319	Chartered surveyors	2434
		*Not elsewhere classified	

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## CITB RESEARCH

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