INDUSTRY
INSIGHTS

Construction Skills Network
Forecasts 2017–2021

NORTH WEST

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 — NORTH WEST

The region's total construction output is forecast to rise by an annual average of 2.5% over the next five years, above the UK average of 1.7% and the third highest growth rate compared with other regions and devolved nations. Construction employment is anticipated to increase by an average yearly rate of 1% whilst at 1.9% of base 2017 employment, the North West's annual recruitment requirement (ARR) is above the UK rate of 1.4%, and at 5,140 is the highest in absolute terms.

Growth is expected to focus on the Public non-housing sector in the short term, by

4.1%

Employment is forecast to grow by

1%

a year on average

The North West has an ARR of

5,140

KEY FINDINGS

The region is projected to see annual average growth of 2.5% in total construction output between 2017 and 2021.

Over the short term the public non-housing sector is likely to see the highest average yearly increases of 4.1%. The largest project in the sector is on-going work for the University of Manchester. Plans have also been revealed for other smaller scale developments; thus, there should be enough work in pipeline for good output growth.

With an annual average rise of 7.9% in the five years to 2021, the infrastructure sector is predicted to be the best performing one. One of the biggest schemes anticipated to take place is enabling works for Moorside new nuclear build project.

The North West's commercial sector is predicted to see average yearly expansion of 2.3% over the next five years. This sector is believed to be the most vulnerable to the impact of the referendum vote over the near term. However, as the dust settles and there is more certainty around what Brexit will actually look like, confidence is likely to return. Thus, moderate growth is predicted from 2019 onwards. One of the largest developments to come on site this year will be the £1bn expansion of Media City in Salford.

The private housing market is expected to see average yearly growth of 2.5% over the long term. A number of projects are planned for the sector in both the short and long run and by 2021 private housing output is likely to reach a new high of £3.53bn.

In contrast, public housing output is projected to decline by 1.8% per annum over the next five years. There is no reason to believe that the prospects for the sector will be better given the extension of Right to Buy to housing associations and the annual rent reductions imposed on them by the government over the next five years. By the end of the forecast period, output is predicted to be around 68% of its 2014 peak.

In 2015, the North West accounted for around 10.6% of UK construction employment. Over the next five years construction employment is likely to rise by 1% per year on average in the region, one of the highest rates compared with other regions and devolved nations and above the UK rate of 0.6%.

At 5,140 extra recruits required per year over the forecast period, the region's ARR is 1.9% of base 2017 employment, higher than the UK rate of 1.4%. There are three occupational categories that have an ARR over 5% of base 2017 employment and a further nine that have an ARR between 2.6% and 5%.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017–2021 – NORTH WEST
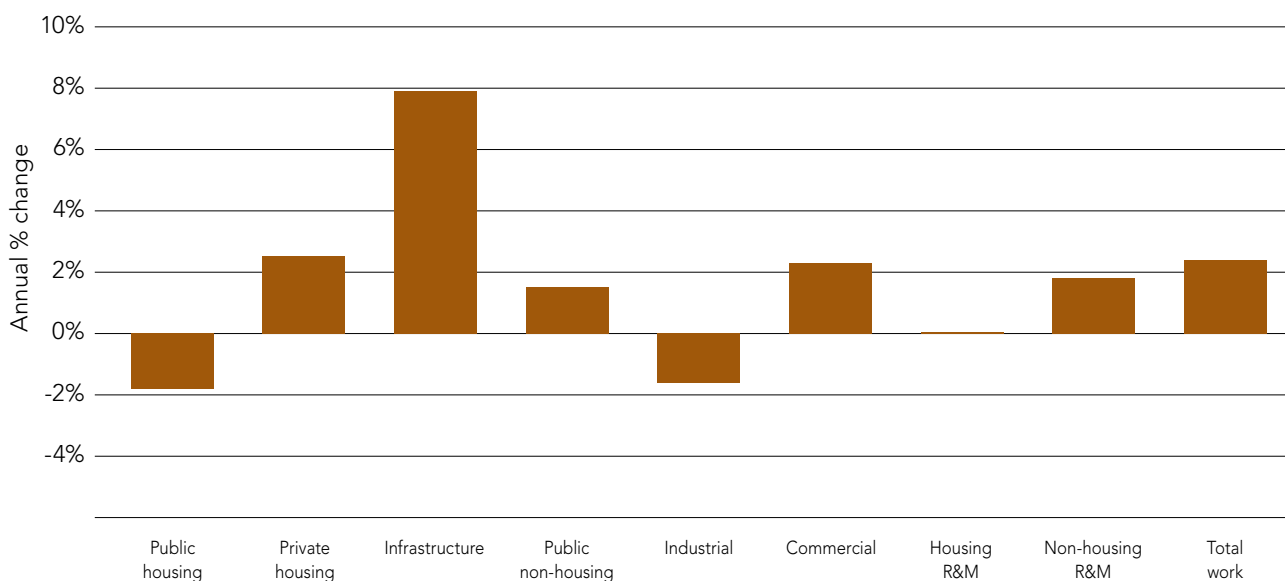
Source: CSN, Experian.
Ref: CSN Explained.

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
UK	**1.7%**	**85,580**	**35,740**

Source: CSN, Experian.
Ref: CSN Explained.

> The region's total construction output is forecast to rise by an annual average of 2.5% over the next five years.

THE OUTLOOK FOR CONSTRUCTION IN THE NORTH WEST

CONSTRUCTION OUTPUT IN THE NORTH WEST – OVERVIEW

In 2015, total construction output went up for the third year running, by 5% to £13.76bn, around 93% of its 2004 peak. Whilst the new work sector increased by 15%, the repair and maintenance (R&M) one dropped by 10%.

Of the new work sectors, the industrial market experienced the greatest growth of 53% to £742m whilst private housing output went up by 28% to £2.81bn. The infrastructure sector saw a rise of 14% to £1.84bn while smaller expansion of 5% and 3% was posted in the commercial (£2.08bn) and public non-housing (£1.2bn) ones. In contrast, the public housing sector was the only one to register a fall, of 4% to £412m.

INDUSTRY STRUCTURE

The Construction Industry structure 2015 – UK vs the North West graphic, illustrates the sector breakdown of construction in the North West, compared to that in the UK. Effectively, the percentages for each sector illustrate what proportion of total output each sector accounts for.

In 2015, new work output accounted for around 66% of the region's total construction output, higher than the UK share of 64%.

The structure of the North West's construction industry has some slight differences compared to the UK. Less emphasis is placed on the region's commercial (15% vs 18%) and housing R&M sectors (15% vs 18%) whilst the private housing market is more important (21% vs 18%). The shares for the remaining sectors were similar to that of the UK as a whole.

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.

In 2015, gross value added (GVA) in the North West increased for the fourth consecutive year, by 1.7% to just over £147bn in 2012 prices.

ECONOMIC STRUCTURE

Outside the Greater South East, the North West has one of the lowest exposures to public services. Nevertheless, the public sector had the second biggest share of the regional GVA at 19.5% in 2015, a figure exceeded by the fast-growing and more dynamic professional services sector (26%), the highest share in all the northern regions. Manufacturing is the third largest sector and despite enduring tough times it accounted for 14.4% of GVA, compared to less than 10% at the UK level. Wholesale and retail (12.6%) and finance and insurance (4.9%) were ranked fourth and fifth respectively. The finance and insurance sector has struggled in the past seven years, enduring a contraction averaging 3% per annum.

CONSTRUCTION INDUSTRY STRUCTURE 2015 — UK VS NORTH WEST

Public housing	Infrastructure	Industrial	Housing R&M
4% | 3%	15% | 13%	3% | 5%	18% | 15%

Private housing	Public non-housing	Commercial	Non-housing R&M
18% | 21%	7% | 9%	18% | 15%	17% | 19%
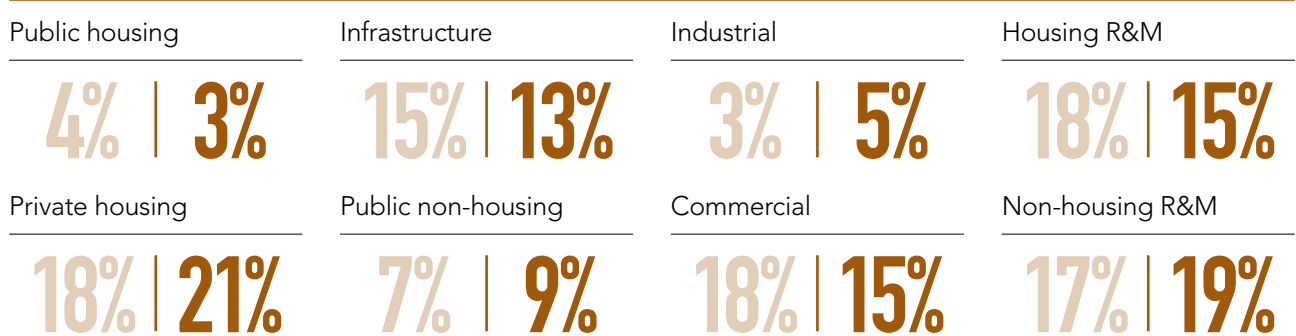
Source: ONS, Experian.

■ UK ■ North West

CONSTRUCTION OUTPUT 1999–2015 — NORTH WEST

£m, constant 2013 prices
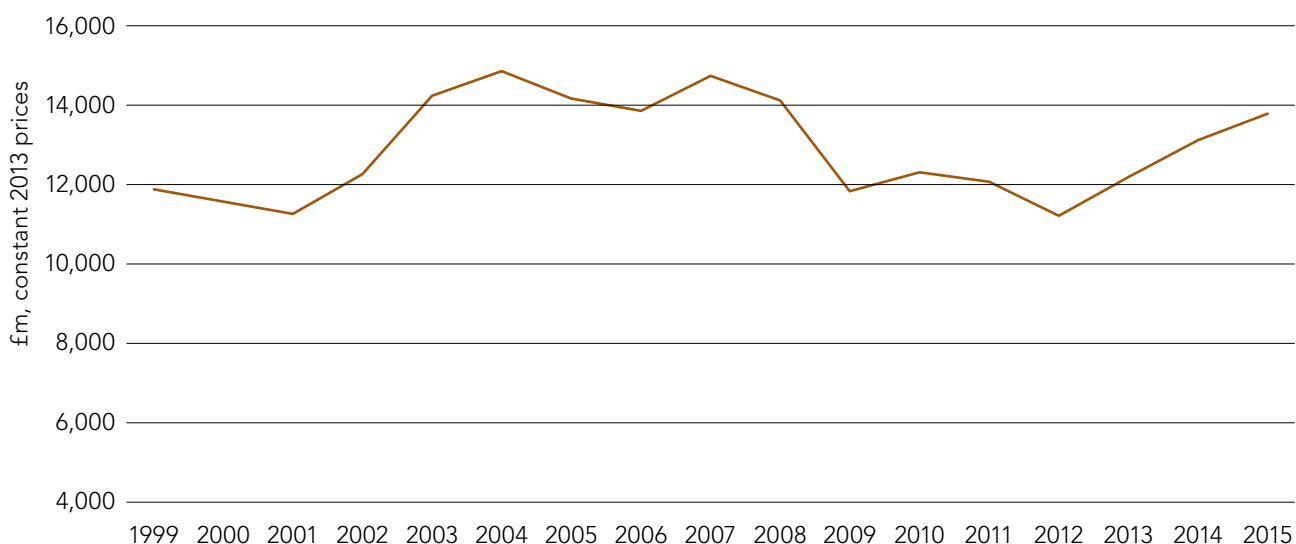
Source: ONS.
Ref: CSN Explained.

ECONOMIC STRUCTURE — NORTH WEST (£ BILLION, 2012 PRICES)

	Actual	Forecast (Annual % change, real terms)					
	2015	2016	2017	2018	2019	2020	2021
Professional & Other Private Services	38.2	2.9	1.6	1.2	1.7	2.0	2.1
Public Services	28.7	1.5	0.8	0.7	1.7	2.4	2.5
Manufacturing	21.2	-0.2	0.3	1.3	1.1	1.0	1.0
Wholesale & Retail	18.5	4.5	1.4	1.3	1.9	2.0	2.2
Transport & Storage	7.2	0.8	0.4	0.1	1.1	1.6	2.1
Total Gross Value Added (GVA)	**147.0**	**2.0**	**1.1**	**1.1**	**1.6**	**1.9**	**2.0**

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

FORWARD LOOKING ECONOMIC INDICATORS

Economic growth is expected to weaken further over the next two years as near-term prospects will be hit by the referendum outcome. Weak performance in manufacturing, public sector and professional and other private services will curb GVA growth in 2017 and 2018. However, GVA expansion should pick up thereafter. Overall, in the five years to 2021 the region's GVA is projected to grow at an average yearly rate of 1.5%, lower than the UK rate of 1.8%.

Of the top five sectors, the wholesale and retail sector is expected to see the greatest annual average expansion of 1.8% and by 2021 it's likely to reach a new high of £21.16bn. The manufacturing industry is projected to experience the weakest average yearly increases of 0.9%.

Real household disposable income is expected to rise by an annual average of 1.3% over the forecast period, below the UK rate of 1.5%.

In 2015, the region's working age population was around 4.5m. Over the forecast period, the North West's working age population as a share of the total population is expected to hover around 62%.

The North West's unemployment rate stood at 5.5% in 2015, similar to the UK rate of 5.4%. Over the next five years the region's unemployment rate is predicted to remain around 5.4%.

Overall, UK forecasts are lower than predicted a year ago due to increasing global uncertainty, 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.

NEW CONSTRUCTION ORDERS — OVERVIEW

New construction orders in the region went up by 16% to £6.83bn (current prices) in 2015. There was a mixed picture across the new work sectors. The strongest rise of 110% to £1.6bn was seen in the infrastructure sector. The industrial and commercial sectors registered growth of 69% and 17% respectively, while the smallest increase, of 4%, was recorded in the private housing sector. In contrast, both the public housing and public non-housing sectors posted declines, of 44% and 35% respectively.

NEW CONSTRUCTION ORDERS — CURRENT SITUATION

In the first nine months of last year the value of new orders went up by 6% to £5.68bn on an annual basis. Infrastructure orders rose by 56% to £2.08bn whilst the public housing sector saw an increase of 48% to £133m. Smaller growth of 5% and 4% was posted in the private housing (£1.55bn) and commercial markets (£1.17bn) respectively. In contrast, industrial orders dropped by 53% to £302m whilst the public non-housing sector saw a decrease of 35% to £445m.

ECONOMIC INDICATORS — NORTH WEST (£ 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)	114.1	2.5	0.0	1.3	1.4	1.9	2.1
Household spending (2012 prices)	121.4	2.8	1.4	0.6	1.4	1.9	2.0
Working age population (000s and as % of all)	4,450	62.3%	62.2%	62.1%	62.2%	62.5%	62.4%
House prices (£)	139,917	2.7	0.5	0.8	1.8	2.2	2.5
LFS unemployment (millions)	0.2	-8.4	7.0	2.8	0.6	-0.4	-1.0

Source: ONS, DCLG, Experian.

NEW CONSTRUCTION ORDERS GROWTH 1999-2015 — NORTH WEST VS GB

Source: ONS.
Ref: CSN Explained.

GB — North West

NEW WORK CONSTRUCTION ORDERS — NORTH WEST (£ MILLION, CURRENT PRICES)

Selected sectors	Actual	Annual % change				
	2015	2011	2012	2013	2014	2015
Public housing	117	31.4	-0.8	9.1	-23.9	-44.3
Private housing	2,012	32.3	7.4	66.9	46.0	3.6
Infrastructure	1,597	-16.4	63.5	26.8	-43.3	110.4
Public non-housing	797	-22.1	-31.8	62.8	-8.4	-35.0
Industrial	822	-32.4	52.7	65.8	3.4	68.8
Commercial	1,486	-12.6	0.8	-8.1	9.7	16.8
Total new work	**6,831**	**-10.4**	**4.5**	**32.1**	**-0.3**	**15.8**

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 nine months of 2016 the region's total output edged down, by 2% to £10.79bn (current prices) compared with the same period a year earlier. Performance across the new work sectors was mixed with output in the private housing market registering the biggest increase, of 18%, to £2.65bn, whilst increases of 5% and 3% were also experienced in the commercial (£1.8bn) and infrastructure (£1.47bn) sectors respectively. In contrast, industrial output posted the largest decline of 40% to £379m while the public housing sector decreased by 23% to £259m. The public non-housing one experienced the smallest fall of 22% to £779m. In 2016, total construction output in the region is estimated to shrink by 3% in real terms to £13.38bn in 2013 prices. Whilst activity in the new work sector is likely to decrease by 2%, a bigger fall of 5% is estimated for the repair and maintenance (R&M) one.

Output is expected to rise by an annual average of 1.6% over the next two years. Growth is forecast to be stronger in the new work sector compared with the R&M one (2.2% vs 0.5%).

The public non-housing sector is likely to experience the highest annual average growth rate of 4.1% in the two years to 2018 as on-going work at the University of Manchester and a number of other small and medium sized projects boost output. A planning application to build a new £60m mental health hospital near Liverpool has been submitted to Sefton city council by Kier construction. The project, if approved, will involve an 11,000 square metre redevelopment of the current Scott clinic facility which no longer meets the Trust's requirements. Work could start in April 2017 if the project is given the go-ahead. Bam Construct has recently won a project to build a £30m engineering innovation centre at the University of Lancashire. The work is expected to start in early 2017 and will be completed in summer 2018. In 2016, the Liverpool mayor announced plans to expand the city's knowledge quarter by turning a former school into a new site specialising in life and medical science at Minshull Street on the edge of the city centre. The development is likely to include Grade A office space with the first phase of the project expected to start this year.

Infrastructure output is predicted to rise by an annual average of 3.8%. Over the near term there are likely to be a number of projects taking place. For example, the government has recently announced a smart motorway project on the M62 J10-12 between Manchester and Warrington with the project value expected to be around £130m. Work is expected to start in 2017 and will last until 2020. The Cheshire East Council has recently announced £170m of infrastructure projects to be taken forward.

They include the £38m Poynton relief road, due to open in 2019. Highways England is taking forward improvement works between junctions 6-8 of the M56, and to the A585 between Windy harbour and Skipool.

Moderate expansion of 3.7% per annum is predicted to be seen in the private housing market. A scheme which has recently been given the green light is New Victoria, a project worth almost £200m located in Manchester city centre, close to Victoria station. The project is to include an eight story office development and two residential buildings. Work is expected to start by the end of this year. Another sizeable development planned is a £75m residential scheme which includes one, two and three-bed apartments on the banks of river Irwell near Manchester city centre. The development will include a spa, gym, café and business centre.

The commercial sector is anticipated to see average yearly expansion of 0.4% over the next two years. U+I has recently won an £850m project to regenerate a 24-acre site around Manchester's Mayfield railway station. The scheme will comprise 1,300 homes, 75,000 square metres of office space, a 350-bedroom hotel, retail and leisure facilities and a new city park. The second phase of Rochdale town centre's redevelopment is to include offices, 100 new apartments and a hotel with up to 120 bedrooms. If the green light is given, construction is expected to start in summer 2017.

The public housing sector is projected to see annual average falls of 2.9% over the short term. The extension of Right to Buy to housing associations and the annual rent reductions imposed on them by the government over the next five years are inevitably going to impact on balance sheets and make them less attractive to investors. Given the difficult operating environment that the sector finds itself in it's no surprise that output is expected to shrink. The fall in public housing output over the forecast period is common across most English regions whilst the pattern is likely to be different for devolved nations, as they have their own set of housing programmes. However, since the referendum result there have been calls to provide more funding for truly affordable housing and if this does actually happen, the prospects for the sector could be better.

CONSTRUCTION OUTPUT – NORTH WEST (£ MILLION, 2013 PRICES)

	Actual	Forecast annual % change			Annual average
	2015	2016	2017	2018	2017-2018
Public housing	412	-22%	-6%	0%	-2.9%
Private housing	2,812	11%	7%	1%	3.7%
Infrastructure	1,842	0%	10%	-2%	3.8%
Public non-housing	1,202	-13%	3%	6%	4.1%
Industrial	742	-28%	-9%	-4%	-7.0%
Commercial	2,077	0%	-1%	1%	0.4%
New work	**9,087**	**-2%**	**4%**	**1%**	**2.2%**
Housing R&M	2,109	-4%	-2%	0%	-0.7%
Non-housing R&M	2,567	-6%	1%	2%	1.6%
Total R&M	**4,676**	**-5%**	**0%**	**1%**	**0.5%**
Total work	**13,762**	**-3%**	**3%**	**1%**	**1.6%**

Source: Experian.
Ref: CSN Explained.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017–2018 – NORTH WEST
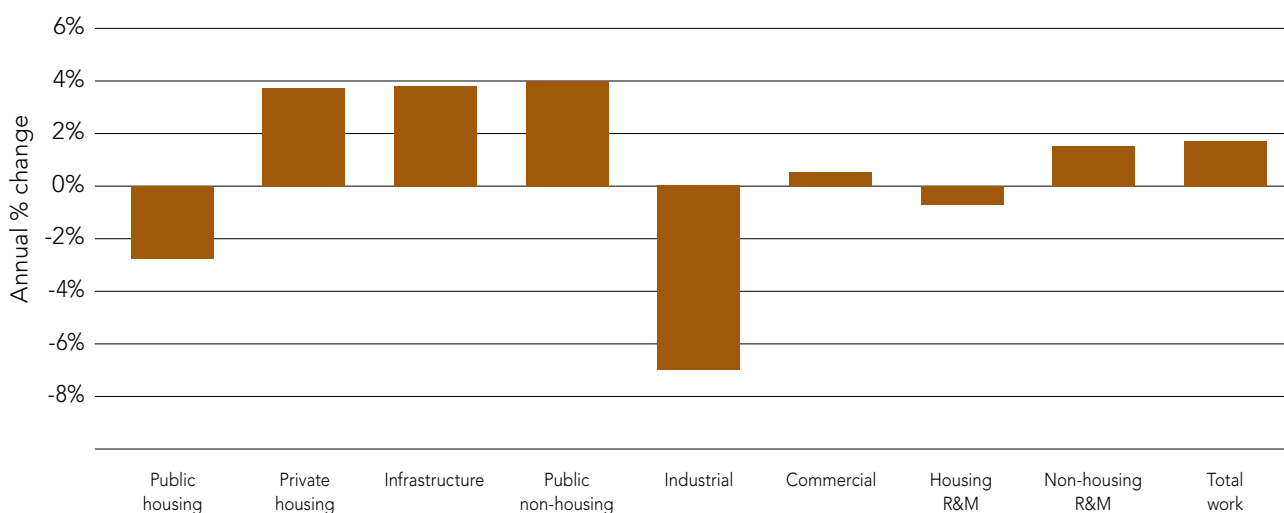
Source: Experian.
Ref: CSN Explained.

Wood trades and interior fit-out is projected to see the biggest rise in employment.

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

Growth in total construction output is projected to average 2.5% a year in the North West over the five years to 2021, well above the UK rate of 1.7% and putting the region third in the overall rankings, behind Wales and the South West.

Over the next five years the region's best performing sector is predicted to be the infrastructure one with annual average increases of 7.9%, higher than the UK rate of 5.4%. Strong growth is expected to be seen in the final two years of the forecast period linked to the start of enabling works at Moorside. By 2021, it is anticipated that the sector will reach a new high of £2.69bn and infrastructure output will increase its share of total construction output from 14.8% in 2017 to 17.8% by the end of the forecast period.

In 2021, private housing output is estimated to reach a new peak of £3.53bn. There are a number of developments that should take place over the forecast period, which are likely to keep the sector buoyant, leading to average yearly increases of 2.5%. Around 400 residential units have been earmarked for Cheadle Hulme, Stockport. If the go-ahead is given, work will commence in mid-2018.

The commercial market is predicted to see average annual expansion of 2.3% over the next five years. Over the short term we believe this sector is the most vulnerable to the impact of the referendum vote, as it is most exposed to speculative investment. Thus, moderate growth only kicks in from the second half of the forecast period. Salford City Council has approved plans to expand the Media City centre in Salford. The £1 billion project will feature new office space, apartments, an energy centre, retail and leisure buildings and parking spaces. Plans have also been revealed for a £1bn development on the banks of Manchester Ship Canal overlooking the Trafford Centre. The project will include the development of 3,000 flats, one million square feet of shop and office space, a 300-room hotel, a 150-bed care home and a primary school.

The industrial market is projected to see falls in output during the short term due to the lack of projects coming into the pipeline. However, as the region's prospects improve in the second half of the forecast period, growth should return to the sector. Overall, the industrial sector is likely to see annual average declines of 1.6% over the next five years.

BEYOND 2021

According to the latest National Infrastructure Pipeline, main works on the Moorside new nuclear build project is anticipated to start in financial year 2022/23 with an estimated cost of £15bn. However, it is likely that this is the total cost of the project, including non-construction items.

In 2015, regeneration work started at Bolton's Horwich Loco Works site. Once the development is complete in mid-2030, the 190-acre site will include 1,700 homes, shops and office buildings.

Plans have been revealed for the regeneration of the New Cross area, located to the north east of Manchester city centre. At present, this site contains limited buildings as well as car parks and vacant land. If the go-ahead is given this area could see apartments and townhouses being built, although warehouses and listed buildings will be retained. It is hoped this project will attract new businesses to the area. Construction work is expected to start in spring 2018 with completion in 2027.

Last year, Omega Warrington Limited completed work on Barraw Hall Primary School at its Omega South site in Warrington. However, further development has been earmarked for this site, including 1,100 residential units (of which 20% will be starter homes), a care home, hotel, restaurants, cafés and shops. The project will be delivered in phases over the next ten years.

CONSTRUCTION OUTPUT – NORTH WEST (£ MILLION, 2013 PRICES)

	Estimate	Forecast annual % change					Annual average
	2016	2017	2018	2019	2020	2021	2017-2021
Public housing	323	-6%	0%	4%	-6%	-1%	-1.8%
Private housing	3,128	7%	1%	1%	1%	3%	2.5%
Infrastructure	1,839	10%	-2%	-3%	11%	26%	7.9%
Public non-housing	1,044	3%	6%	1%	-6%	4%	1.4%
Industrial	533	-9%	-4%	3%	2%	2%	-1.6%
Commercial	2,073	-1%	1%	4%	4%	2%	2.3%
New work	**8,940**	**4%**	**1%**	**1%**	**3%**	**8%**	**3.2%**
Housing R&M	2,030	-2%	0%	0%	0%	1%	-0.1%
Non-housing R&M	2,411	1%	2%	3%	2%	1%	1.8%
R&M	**4,441**	**0%**	**1%**	**2%**	**1%**	**1%**	**1.0%**
Total work	**13,381**	**3%**	**1%**	**1%**	**2%**	**6%**	**2.5%**

Source: CSN, Experian.
Ref: CSN Explained.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017–2021 – NORTH WEST
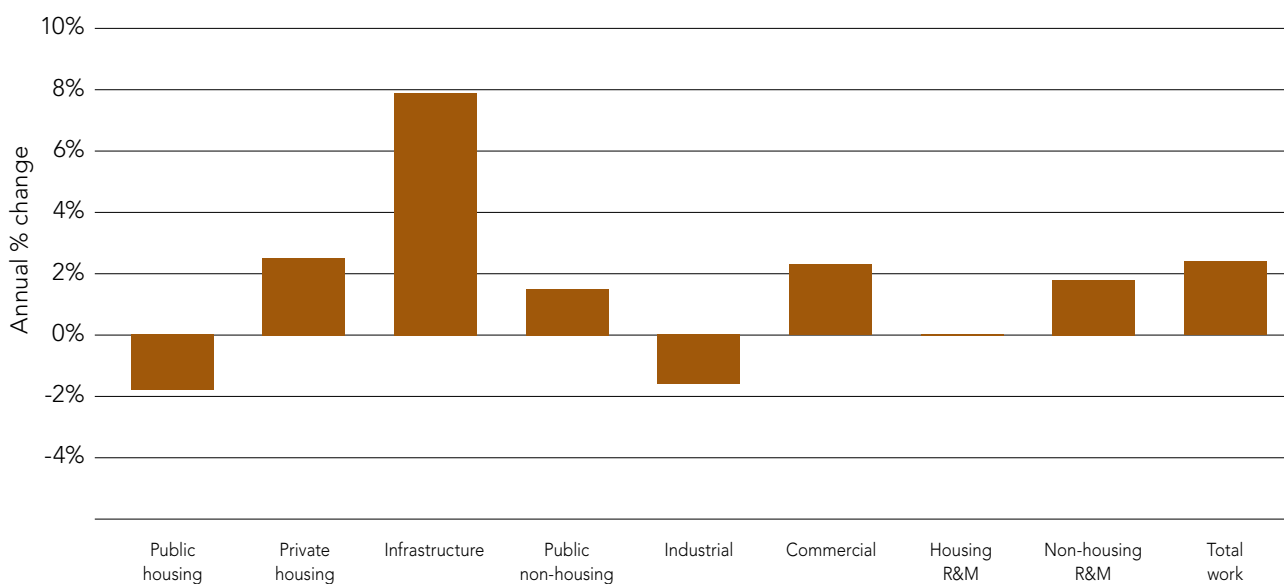
Source: CSN, Experian.
Ref: CSN Explained.

CONSTRUCTION EMPLOYMENT FORECASTS FOR THE NORTH WEST

TOTAL CONSTRUCTION EMPLOYMENT FORECASTS BY OCCUPATION

The table presents actual construction employment (SICs 41-43, 71.1 and 74.9) in the North West 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.

Employment in the region is projected to grow by an annual average of 1% over the next five years, higher than the UK rate of 0.6%. Employment is expected to rise by around 14,500 to 287,010 over the five years to 2021, around 92% of its 2008 peak. The wood trades and interior fit-out occupation is projected to see the biggest rise in employment over the next five years of about 3,600.

Expansion is predicted for 22 of the 28 occupational categories, with civil engineering operatives nec. projected to see the strongest annual average growth of 2.9%. By the end of the forecast period, employment in this occupation is likely to reach a new high of 1,500. In contrast, at the UK level, in 2021 civil engineering operatives nec. are predicted to be just short of their 2008 peak.

Specialist building operatives nec are expected to see the greatest average yearly falls of 2.3% and by the end of the forecast period employment in this occupation is likely to be around 84% of its 2008 peak.

In 2021, the largest construction trade occupation in the region is anticipated to be wood trades and interior fit-out, accounting for around 10% of the total workforce. Electrical trades and installation are expected to be the second biggest construction trade occupation accounting for approximately 7% of the total workforce.

TOTAL EMPLOYMENT BY OCCUPATION – NORTH WEST

	Actual	Estimate	Forecast	
	2015	2016	2017	2021
Senior, executive, and business process managers	17,470	16,790	16,990	17,150
Construction project managers	4,620	4,480	4,630	4,810
Other construction process managers	21,690	21,290	21,200	20,810
Non-construction professional, technical, IT, and other office-based staff	35,500	35,960	37,460	40,050
Construction trades supervisors	4,430	4,420	4,440	4,350
Wood trades and interior fit-out	25,960	26,180	26,990	29,840
Bricklayers	7,090	7,260	7,300	7,780
Building envelope specialists	8,540	8,550	8,660	9,230
Painters and decorators	10,730	11,190	11,210	11,430
Plasterers	5,020	5,290	5,250	5,250
Roofers	5,710	5,910	5,890	6,270
Floorers	3,250	3,230	3,230	3,390
Glaziers	2,920	2,940	3,000	3,120
Specialist building operatives nec*	5,840	5,830	5,630	5,190
Scaffolders	3,320	3,140	3,280	3,360
Plant operatives	4,990	4,740	4,950	5,250
Plant mechanics/fitters	5,090	5,140	5,190	5,140
Steel erectors/structural fabrication	2,570	2,590	2,620	2,770
Labourers nec*	14,510	14,540	14,540	14,630
Electrical trades and installation	21,050	21,150	20,900	20,220
Plumbing and HVAC Trades	18,680	18,900	19,230	19,860
Logistics	2,430	2,480	2,540	2,710
Civil engineering operatives nec*	1,300	1,300	1,360	1,500
Non–construction operatives	4,090	4,220	4,200	4,270
Civil engineers	4,430	4,450	4,650	5,100
Other construction professionals and technical staff	20,210	20,930	21,550	23,090
Architects	3,600	3,690	3,830	4,180
Surveyors	5,990	5,900	6,040	6,260
Total (SIC 41-43)	**236,800**	**237,520**	**240,690**	**248,380**
Total (SIC 41-43, 71.1, 74.9)	**271,030**	**272,490**	**276,760**	**287,010**

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.

The region's annual average recruitment requirement (ARR) is projected at 5,140 for the five years to 2021 and represents 1.9% of base 2017 employment, higher than the UK ratio of 1.4%. In absolute terms, this is the highest ARR of any region or devolved nation, although as a share of base 2017 employment it is beaten by Wales.

The traffic lights suggest that the occupational categories under some pressure are likely to be logistics, bricklayers and civil engineering operatives nec, which all have ARR ratios in excess of 5%. It might be the case that architects, plumbing and HVAC trades, electrical trades and installation, labourers nec, plant operatives, glaziers, plasterers and wood trades and interior fit-out trade occupations are also hard to come by as they have an ARR between 2.6% and 5%. 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 WEST

	2017-2021
Senior, executive, and business process managers	50
Construction project managers	–
Other construction process managers	200
Non-construction professional, technical, IT, and other office-based staff	550
Construction trades supervisors	120
Wood trades and interior fit-out	690
Bricklayers	380
Building envelope specialists	110
Painters and decorators	180
Plasterers	260
Roofers	90
Floorers	<50
Glaziers	80
Specialist building operatives nec*	–
Scaffolders	–
Plant operatives	190
Plant mechanics/fitters	110
Steel erectors/structural fabrication	60
Labourers nec*	410
Electrical trades and installation	650
Plumbing and HVAC Trades	560
Logistics	140
Civil engineering operatives nec*	70
Civil engineers	<50
Other construction professionals and technical staff	70
Architects	110
Surveyors	–
Total (SIC 41-43)	**4,930**
Total (SIC 41-43, 71.1, 74.9)	**5,140**

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 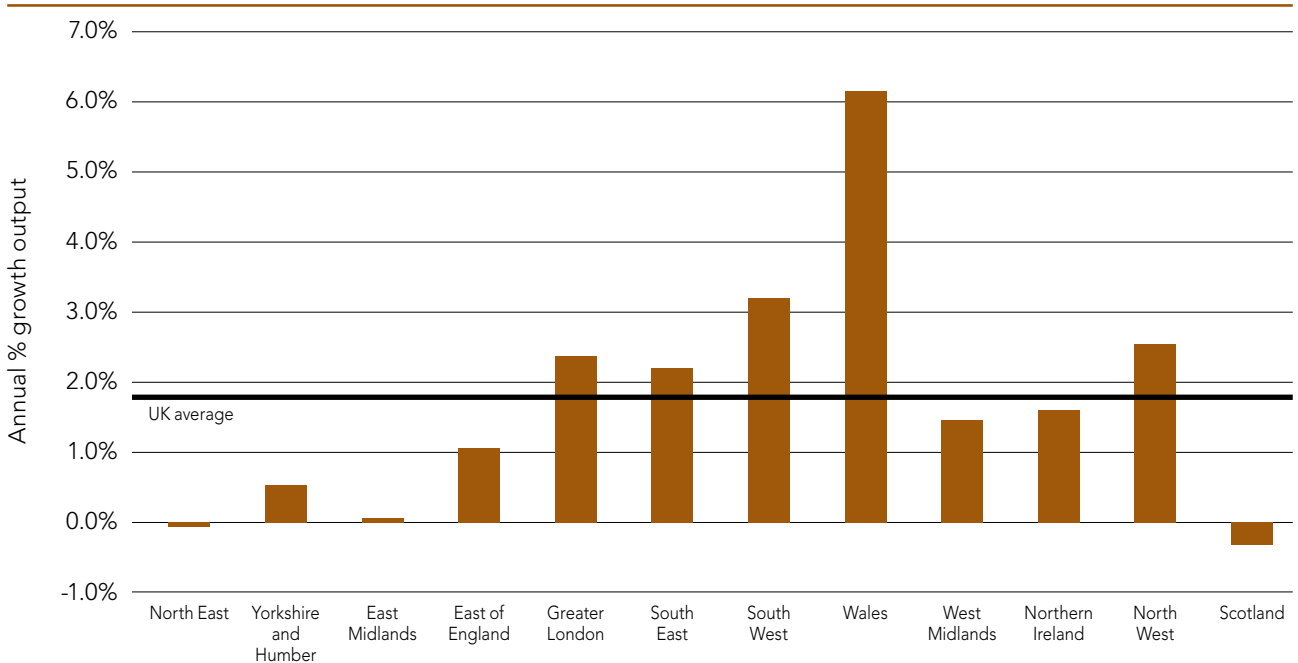employment growth is projected to range from a high of 2.7% in Wales to a low of -0.8% in Scotland, against a UK rate of 0.6%.

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

Annual % growth output

UK average

North East · Yorkshire and Humber · East Midlands · East of England · Greater London · South East · South West · Wales · West Midlands · Northern Ireland · North West · Scotland

Source: CSN, Experian.
Ref: CSN Explained.

ANNUAL RECRUITMENT REQUIREMENT (ARR) BY REGION 2017–2021

Annual requirement - workers

North East · Yorkshire and Humber · East Midlands · East of England · Greater London · South East · South West · Wales · West Midlands · Northern Ireland · North West · Scotland
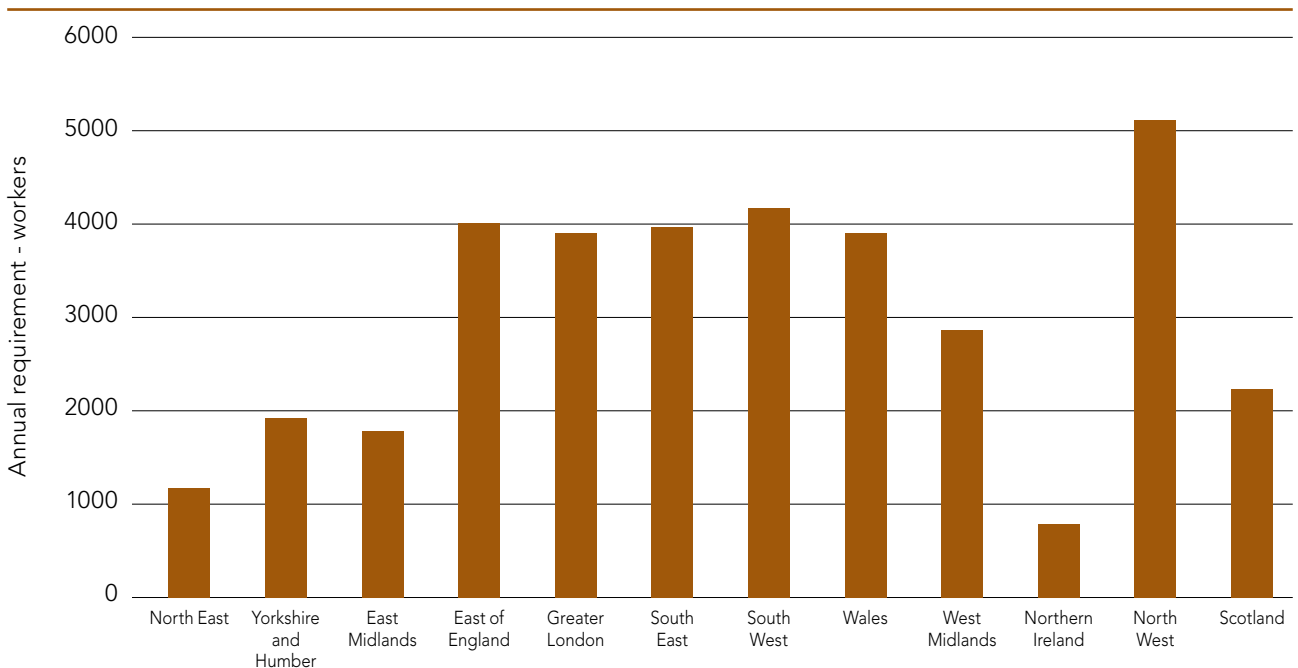
Source: CSN, Experian.

Private housing output is estimated to reach a new peak of £3.53bn.

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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.

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                    ┌──────────────────────┐
                    │     EMPLOYMENT       │
                    └──────────┬───────────┘
                               ▼
                    ┌──────────────────────┐
                    │ SKILLED LABOUR STOCK │
                    └──────────┬───────────┘
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│ ENTRANCE TO INDUSTRY│─▶│ CHANGE IN LABOUR STOCK│◀─│ FLOWS OUT OF INDUSTRY│
└─────────────────────┘  └──────────┬───────────┘  └─────────────────────┘
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                    ┌──────────────────────┐
                    │ SKILLED LABOUR SUPPLY│
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                               ▼
                    ┌──────────────────────┐
                    │ EMPLOYMENT REQUIREMENT│
                    └──────────▲───────────┘
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│ LABOUR COEFFICIENTS │─▶│ SKILLED LABOUR DEMAND │◀─│ PRODUCTIVITY GROWTH │
└─────────────────────┘  └──────────▲───────────┘  └─────────────────────┘
                               │
                    ┌──────────────────────┐
                    │  CONSTRUCTION OUTPUT │
                    └──────────────────────┘
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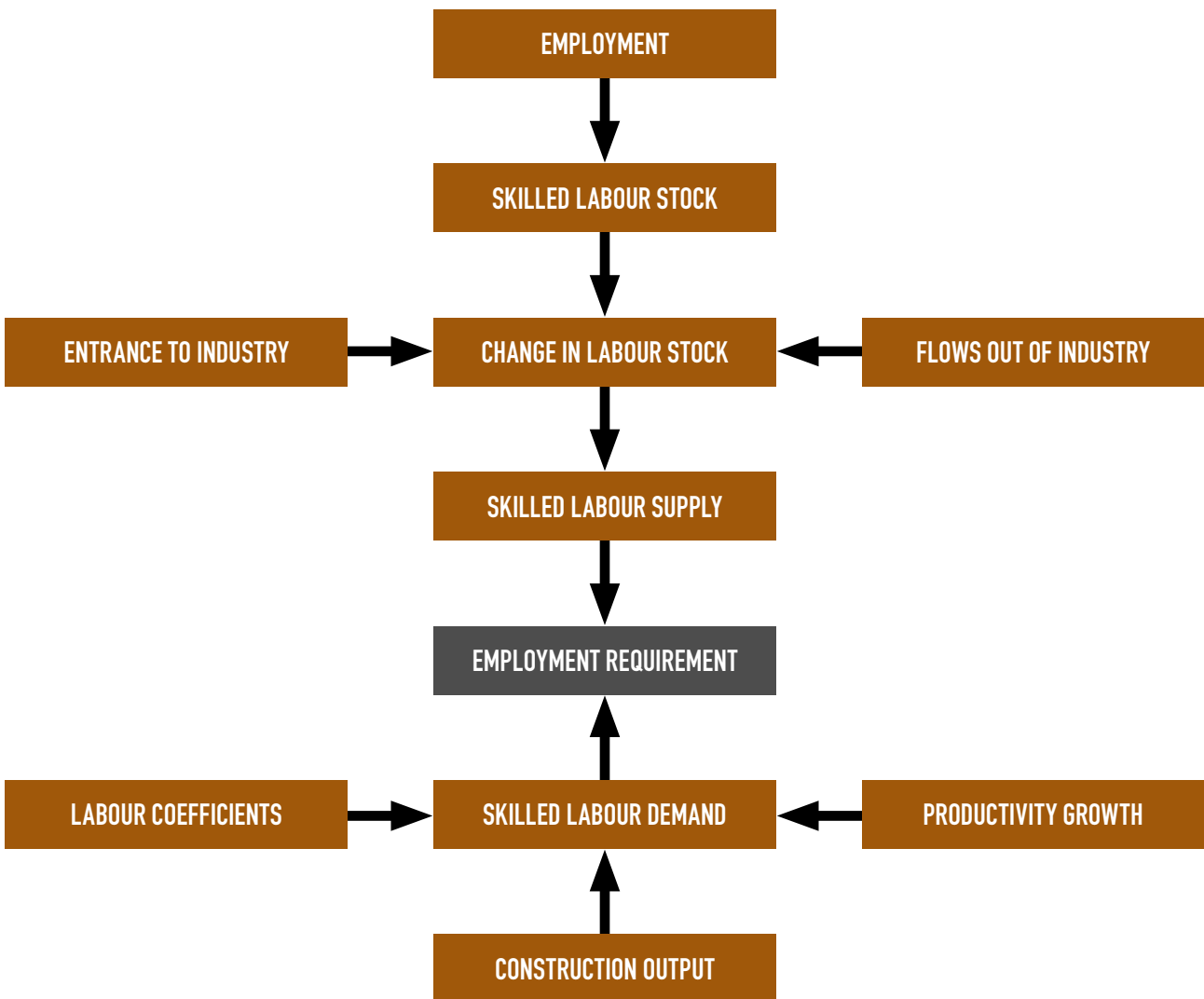
GLOSSARY OF TERMS

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
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 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[1]

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[1]

Schools and universities

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

Health

Private hospitals, nursing homes, clinics.

Offices

Office buildings, banks.

Entertainment

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

Garages

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

Shops

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

Agriculture

All buildings and work on farms, horticultural establishments.

Miscellaneous

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

New work
New housing

Construction of new houses, flats, bungalows only.

All other types of work

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

Repair and maintenance
Housing

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

All other sectors:

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

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

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

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

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

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

Building envelope specialists
Construction and building trades nec* (50%)	5319

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

Plasterers
Plasterers	5321

Roofers
Roofers, roof tilers and slaters	5313

Floorers
Floorers and wall tilers	5322

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

Specialist building operatives not elsewhere classified (nec*)
Construction operatives nec* (100%)	8149
Construction and building trades nec* (5%)	5319
Industrial cleaning process occupations	9132
Other skilled trades nec*	5449

Scaffolders
Scaffolders, stagers and riggers	8141

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

Plant mechanics/fitters
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

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

Labourers nec*
Elementary construction occupations (100%)	9120

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

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

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

Civil engineering operatives not elsewhere classified (nec*)
Road construction operatives	8142
Rail construction and maintenance operatives	8143
Quarry workers and related operatives	8123

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

Civil engineers
Civil engineers	2121

Other construction professionals and technical staff
Mechanical engineers	2122
Electrical engineers	2123
Design and development engineers	2126
Production and process engineers	2127
Quality control and planning engineers	2461
Engineering professionals nec*	2129
Electrical and electronics technicians	3112
Engineering technicians	3113
Building and civil engineering technicians	3114
Science, engineering and production technicians nec*	3119
Architectural and town planning technicians*	3121
Draughtspersons	3122
Quality assurance technicians	3115
Town planning officers	2432
Electronics engineers	2124
Chartered architectural technologists	2435
Estimators, valuers and assessors	3531
Planning, process and production technicians	3116

Architects
Architects	2431

Surveyors
Quantity surveyors	2433
Chartered surveyors	2434

*Not elsewhere classified

For more information about the Construction Skills Network, contact:

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