CITB RESEARCH

INDUSTRY INSIGHTS

GREATER LONDON

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.

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SUMMARY – GREATER LONDON

The region's total construction output is forecast to rise by annual average of 1.5% over the next five years, slightly above the UK average of 1.3%. Once again new work is expected to perform better than repair & maintenance (R&M) (1.9% vs. 0.4%). Construction employment growth in the capital is expected to be marginal at 0.2% a year on average, while annual average expansion of 0.5% is likely for the UK. Greater London, joint with Northern Ireland, has the lowest annual recruitment requirement (ARR) relative to the size of its construction market, at just 0.5%.

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

7.3%

Employment is forecast to grow by

0.2%

a year on average

Greater London has an ARR of

2,010

KEY FINDINGS

The region is anticipated to see annual average growth of 1.5% in total construction output over the next five years. By 2022, output is projected to reach to a new high of £34.87bn (2015 prices).

Over both the short and long term the infrastructure sector is likely to see the biggest average increases per annum. The largest project to take place over the forecast period is High Speed 2 (HS2), which more than offsets large schemes achieving or nearing completion such as Crossrail. Other smaller projects that are in the pipeline include the £400m upgrade at London City Airport.

The private housing sector is predicted to see a rise of 3.0% per annum in the five years to 2022. Expansion is expected to be minimal over the next couple of years as uncertainty surrounding Brexit reduces investment in the sector. However, growth should pick up in the second half of the forecast period as the terms of Brexit become clearer, bringing confidence back into the sector.

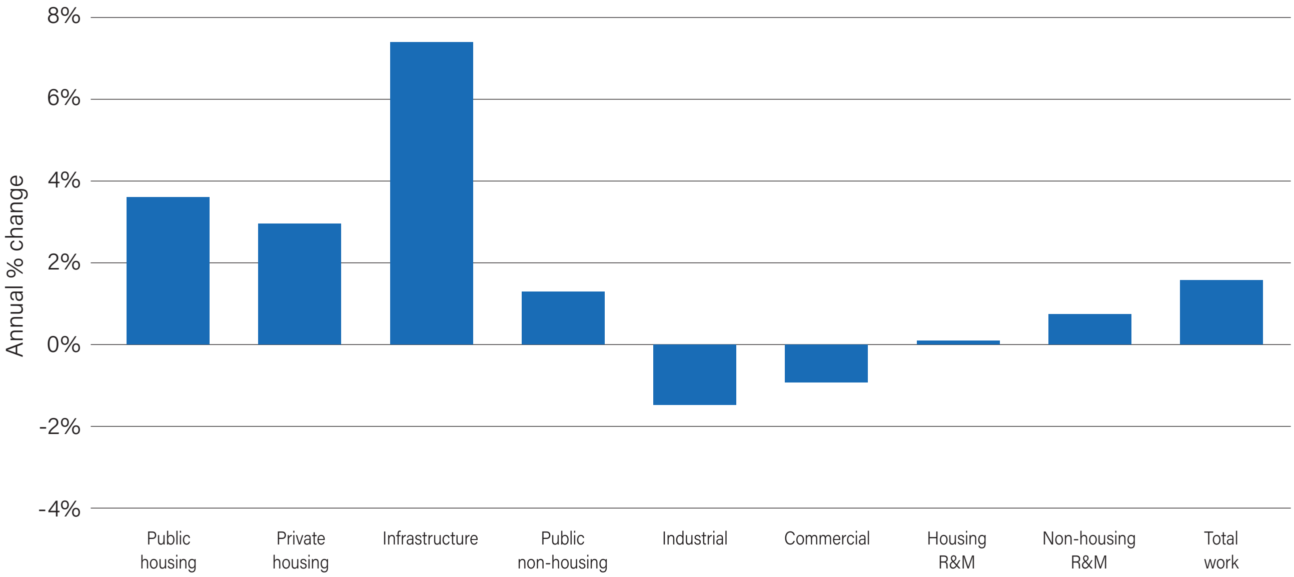
Brexit is likely to have a bigger impact on the capital's commercial sector as moderate declines in commercial output are anticipated over the next three years. There is work on large regeneration schemes entering the pipeline, but there are sharp output falls expected in commercial sub-sectors such as offices, hindering the overall performance of the sector. One project that has been given the go ahead despite Brexit is Google's new £1bn King's Cross head office. The first phase worth £350m is expected to start this year.

Public non-housing output is expected to grow by a yearly average of 1.3% over the long term. Expansion is likely to be the strongest over the next couple of years due to work that is scheduled to take place on University College London's new campus. Another sizeable university project by London South Bank University has been postponed. By 2022, public non-housing output is predicted to be around 69% of its 2010 peak.

In 2016 Greater London accounted for around 15.8% of UK construction employment. Between 2018 and 2022 construction employment is likely to see only marginal growth overall. Plant operatives are anticipated to see the strongest annual average increases of 3.5%.

With 2,010 extra recruits required per year over the five years to 2022, the region's ARR is just 0.5% of base 2018 employment, lower than the UK rate of 1.2%. As London has a high inflow of construction workers there are only a handful of occupational categories that have an ARR between 2.5% and 5%, namely civil engineers, logistics, plant operatives, scaffolders and construction trade supervisors.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2018-2022 – GREATER LONDON



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
UK	**1.3%**	**65,640**	**31,600**

Source: CSN, Experian.
Ref: CSN Explained.

> Greater London is projected to see annual average construction output growth of 1.5% over the five years to 2022, slightly above the UK average of 1.3%.

THE OUTLOOK FOR CONSTRUCTION IN GREATER LONDON

CONSTRUCTION OUTPUT IN GREATER LONDON – OVERVIEW

In 2016 total construction output increased for the third year running, by 6% to £32.86bn in 2015 prices, a new high. While the new work sector posted a rise of 9% the R&M one edged down by 1%. Expansion was largely driven by the commercial and private housing sectors. Increases of 9% and 3% respectively took both sectors to new highs.

INDUSTRY STRUCTURE

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

In 2016 new work accounted for 71% of total output in the capital compared with 64% nationwide.

The structure of the region's construction industry is significantly different from the UK average. London has a much better commercial construction sector than the UK, with it accounting for 30% of total output in the capital compared with 19% across the UK. In contrast, the capital's infrastructure (8% vs. 12%), housing R&M (16% vs. 19%) and non-housing R&M (14% vs. 17%) sectors are less important. At 20%, the share for the private housing one was identical to the national average while 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 (2018–2022) provides an indication of the construction sectors in which demand is likely to be strongest.

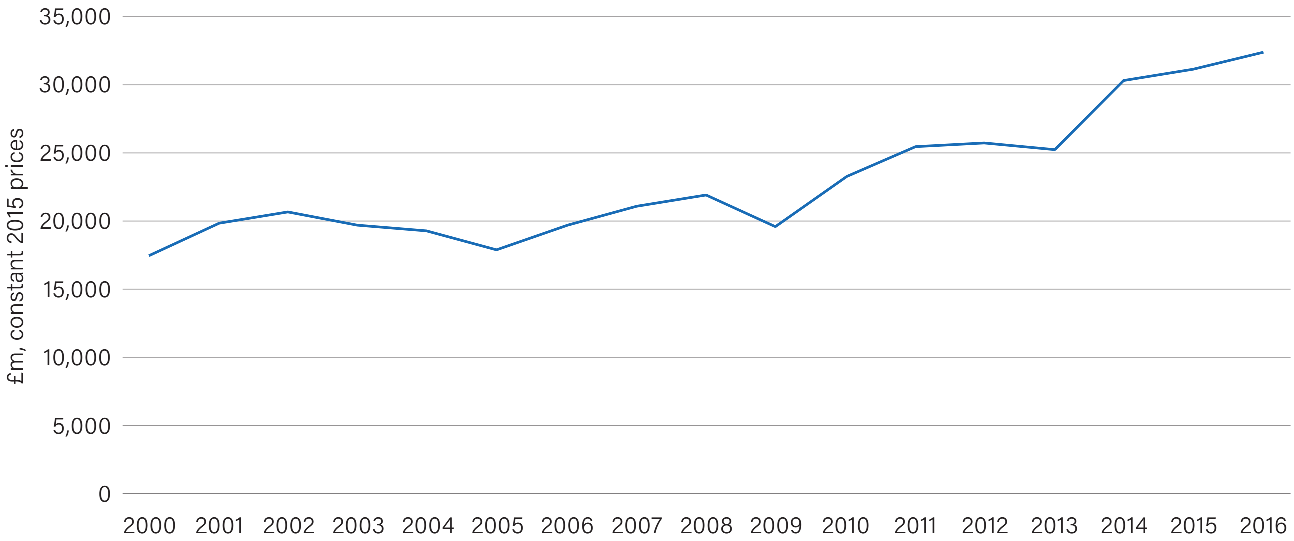
In 2016 gross value added (GVA) in the region grew for the seventh consecutive year, by 1.9%, to £376.11bn in 2013 prices. Growth was strongest in the information and communications sector at nearly 5.5%, with wholesale and retail the second most buoyant with expansion of 3.5%. The large professional and other private services sector posted growth of around 2.6% and finance and insurance managed a rise of 2%. In contrast, public services, the third largest in the region, saw output decline by nearly 1%.

ECONOMIC STRUCTURE

London's economy has a heavy bias towards the fast-growing business service sector. At 34.5% of the region's GVA, professional and other private services was the largest sector in 2016, and this was a share significantly higher than in the UK as a whole (27.6%). The finance and insurance sector took the next biggest share, at 15.4%, more than double its proportion across the UK. Consumer services also make a notable contribution to jobs and output growth and while public services has a significant absolute presence in London, in relative terms its contribution is overshadowed by that of the private sector.

Manufacturing, which UK-wide took a share of total GVA of close to 10%, only managed one of 2% in the capital.

CONSTRUCTION OUTPUT 2000-2016 – GREATER LONDON



Source: ONS.
Ref: CSN Explained.

CONSTRUCTION INDUSTRY STRUCTURE 2016 – UK VS GREATER LONDON

Sector	UK	Greater London
Public housing	3%	5%
Infrastructure	12%	8%
Industrial	3%	1%
Housing R&M	19%	16%
Private housing	20%	20%
Public non-housing	7%	6%
Commercial	19%	30%
Non-housing R&M	17%	14%

Source: ONS, Experian.

UK Greater London

ECONOMIC STRUCTURE – GREATER LONDON (£ BILLION, 2013 PRICES)

	Actual	Forecast (Annual % change, real terms)					
	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Professional & Other Private Services	129.6	2.0	1.9	2.3	2.5	2.7	3.0
Finance & Insurance	58.0	1.0	1.9	2.3	3.0	3.2	3.9
Public Services	48.1	0.6	1.3	2.0	2.3	2.3	2.6
Information & Communication	39.7	3.2	2.8	2.5	2.5	2.7	3.5
Wholesale & Retail	31.8	1.8	1.6	2.1	2.3	2.6	3.1
Total Gross Value Added (GVA)	**376.1**	**1.7**	**1.9**	**2.3**	**2.5**	**2.6**	**3.1**

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

FORWARD LOOKING ECONOMIC INDICATORS

In the five years to 2022 GVA in the region is projected to grow by an annual average rate of 2.5%, higher than the UK rate of 2%.

London's biggest sector, professional and other private services is predicted to experience annual average increases of 2.5% between 2018 and 2022. Of the top five sectors, the second largest one, finance and insurance is anticipated to see the strongest average yearly increases of 2.9%. Public services, the third largest one is expected to see the smallest average expansion of 2.1% per annum.

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 London to see stronger increases towards the end of the forecast period. In turn, household spending growth will begin to accelerate.

As is the case across all UK regions, London's economy remains at risk as Brexit-related fears and uncertainty weigh on investment and hiring in all key sectors, and the risks are probably magnified in the capital. For London, it is the issues of passporting rights and the rights of EU workers currently employed in the UK that form the basis of these fears. Should there be a hard Brexit under which the rights of EU migrant workers and passporting rights are both revoked, this will have a significant impact on London's economy. At the time of writing this report, there was still no clarity on what the final Brexit outcome would be for migrants and finance and business sector trading rules.

NEW CONSTRUCTION ORDERS – OVERVIEW

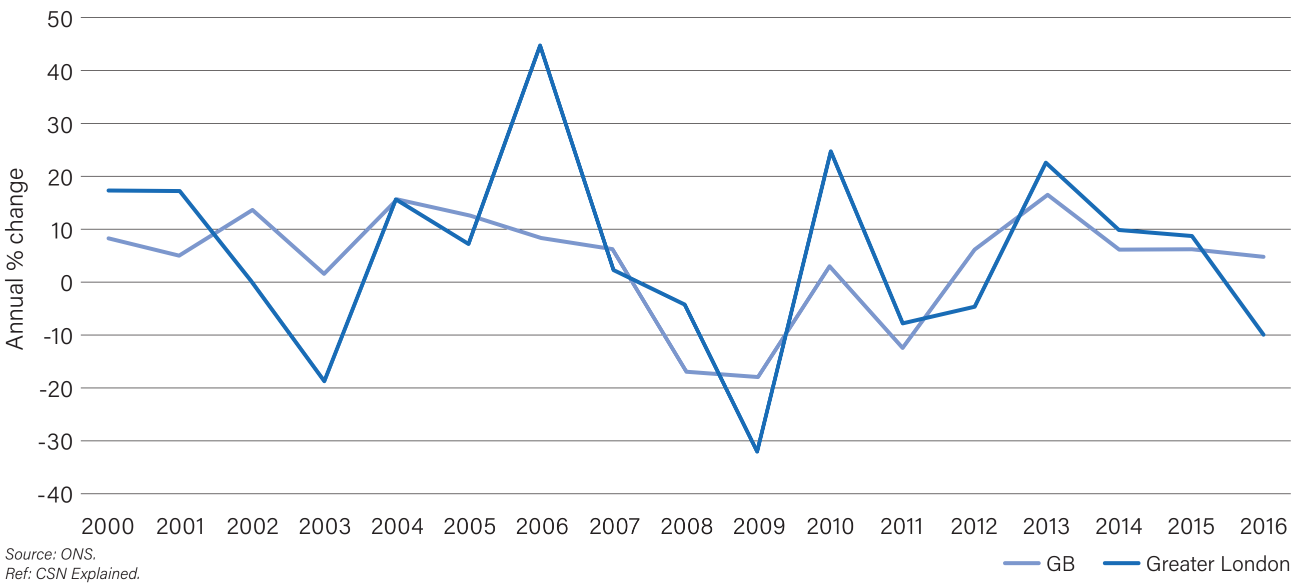
After three consecutive years of growth, in 2016 total construction orders fell by 9% to £13.45bn (current prices). There was a mixed performance across the sectors with the housing ones experiencing growth whilst the rest saw declines. Public housing orders jumped by 80% to £747m while the private housing ones registered a rise of 14% to £4.19bn, a new high. In contrast, infrastructure orders shrank by 42% to £1.5bn and the public non-housing (£1.44bn) and commercial (£5.4bn) ones both fell by 11%.

ECONOMIC INDICATORS – GREATER LONDON (£ 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)	215.5	0.0	1.4	1.2	1.7	1.8	2.1
Household spending (2013 prices)	178.2	2.5	1.7	2.1	2.7	2.7	2.8
Working age population (000s and as % of all)	5,989	67.84%	67.82%	67.89%	68.18%	68.14%	68.01%
House prices (£)	467,583	3.3	2.5	2.7	3.3	3.4	4.4
LFS unemployment (millions)	0.28	-2.4	3.5	9.3	5.4	2.5	-0.8

Source: ONS, DCLG, Experian.

NEW CONSTRUCTION ORDERS GROWTH 2000-2016 – GREATER LONDON VS. GB



Source: ONS.
Ref: CSN Explained.

NEW WORK CONSTRUCTION ORDERS – GREATER LONDON (£ MILLION, CURRENT PRICES)

	Actual	Annual % change				
	2016	**2012**	**2013**	**2014**	**2015**	**2016**
Public housing	747	-1.6	187.2	-69.2	-26.0	80.0
Private housing	4,192	-15.3	103.5	16.7	-10.2	13.7
Infrastructure	1,495	26.3	-53.3	-37.2	146.4	-41.7
Public non-housing	1,441	-21.1	31.6	10.8	2.8	-11.1
Industrial	175	-49.5	122.2	3.2	85.5	-58.4
Commercial	5,399	-16.7	25.2	65.6	0.9	-11.1
Total new work	**13,449**	**-5.2**	**22.9**	**10.2**	**9.2**	**-9.0**

Source: ONS.
Ref: CSN Explained.

NEW CONSTRUCTION ORDERS – CURRENT SITUATION

In the first nine months of 2017, total new orders rose by 17% to £12.21bn compared with the corresponding period in the preceding year. The infrastructure sector recorded the strongest growth of 320% to £4.19bn. This upsurge is due to civil engineering contracts that have been let for HS2 in the third quarter of 2017. In contrast, the public housing (£429m) and public non-housing (£858m) orders posted declines of 37% and 20% respectively. Furthermore, double-digit falls were also recorded for the commercial and private housing sectors, albeit at a more moderate rate.

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 nine months to September last year total construction output edged down by 1% to £24.89bn (current prices) year-on-year. Public housing output saw the strongest increase of 15% to £1.35bn while the private housing sector grew by 8% to £5.43bn. At £2.04bn, the infrastructure one remained flat whereas falls of 13% and 7% were recorded for the public non-housing and commercial sectors respectively. Overall total construction in the capital is estimated to see a marginal fall of 1% to £32.45bn (2015 prices) in 2017.

Overall, output is expected to stagnate over the next two years, although there are likely to be significant differences in performance across the sectors. While the new work sector is predicted to see negligible increases of 0.8% per annum, the R&M sector is projected to fall by an average of 1.3%.

Over the next two years, with an annual average expansion of 17.8%, Greater London's infrastructure sector is projected to be by far the best performing one, as work on HS2 starts on site. Winners of the £6.6bn main construction contracts for HS2 Phase 1 were announced in July 2017 and a substantial proportion of this has been allocated to new orders in London. Stage 1 covers design and construction preparation works. Stage 2, the full construction stage, will start in 2019 and is likely to last for approximately four to five years.

The public non-housing sector is projected to see average yearly expansion of 3.4% over the short term. This is mainly due to work scheduled to begin this year on University College London's new campus. The 'Olympicopolis' project is one of the largest projects in the pipeline with phase one likely to take place on around 50,000 square metres of land with the first building anticipated to be complete by summer 2020.

Given the latest output statistics, double-digit growth is estimated for the region's public housing output in 2017. Expansion is likely to slow this year but as the government is looking to encourage local authorities to start building again, it is expected to accelerate again in 2019. In terms of projects, housing association Catalyst was chosen for the Mayor of London's first 100% affordable housing scheme. The development will be situated in Waltham Forest on the former Webbs Industrial Estate. Approximately 330 residential properties will be built, which will either be affordable or available for shared ownership.

The private housing sector is anticipated to see modest annual average increases of 1.2% over the next two years. Uncertainty surrounding Brexit is likely to curb investor appetite. At the same time, affordability issues are dampening buyer confidence and demand. Buyer demand remains at risk from a weaker labour market, job creation losing its momentum and real wage growth constrained by inflationary pressures.

The region's largest sector, commercial construction, is expected to see the biggest average yearly declines of 5.5%. Despite work that is due to take place on large projects and regeneration schemes over the next two years, uncertainty surrounding Brexit has caused investors and developers to be much more cautious in taking forward new projects in the aftermath of June 2016's vote and this is now beginning to impact work on the ground. One project that hasn't been adversely affected by Brexit is Google's new £1bn King's Cross head office which has been given the green light. The first phase of works, worth £350m, is expected to start this year and will be carried out by Lendlease. Once complete the 11-storey building will contain floorspace of more than one million square feet.

Industrial output is projected to experience average falls of 4.6% per annum. Given the lack of sizeable projects starting in the sector the outlook is bleak. A double-digit fall is estimated for 2017 with more moderate declines thereafter. However, the sector only accounted for 1% of total construction output in 2016 and therefore has little impact on the capital's total construction output.

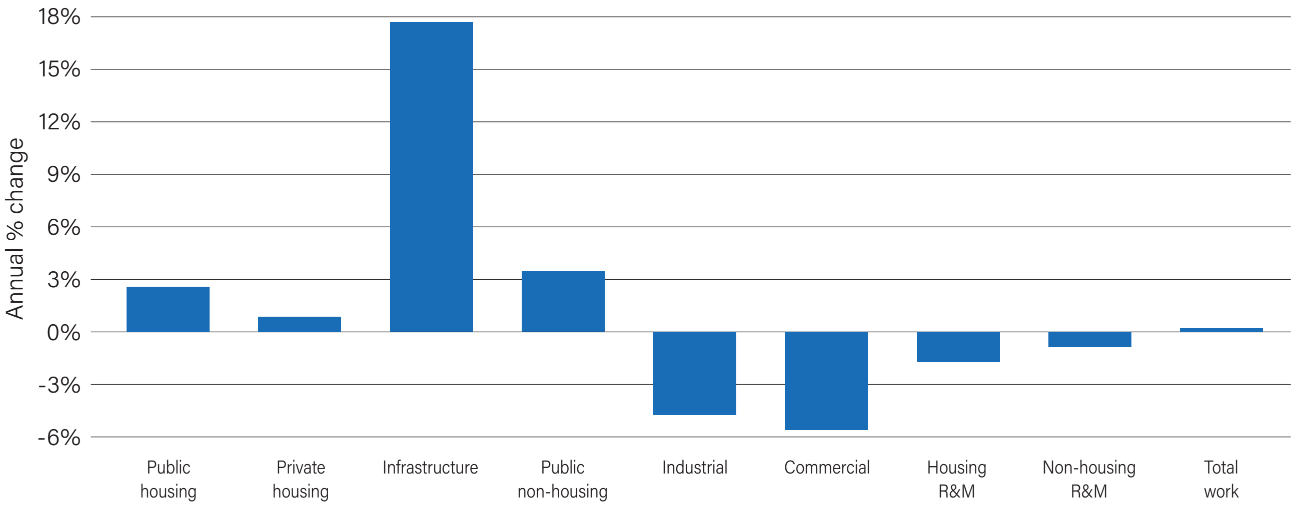
As in the UK as a whole, the relationship between disposable income, consumer spending and housing R&M expenditure seems to have broken in Greater London in 2017, with output estimated to have grown by 5% in real terms despite downward pressures on disposable incomes and consumer spending growth. It may be that a quieter housing market, in which 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.

CONSTRUCTION OUTPUT – GREATER LONDON (£ MILLION, 2015 PRICES)

	Actual	Forecast (Annual % change)			Annual average
	2016	2017	2018	2019	2018-2019
Public housing	1,633	10%	2%	4%	2.7%
Private housing	6,647	5%	1%	2%	1.2%
Infrastructure	2,648	-4%	15%	20%	17.8%
Public non-housing	2,103	-13%	4%	3%	3.4%
Industrial	287	-42%	-5%	-5%	-4.6%
Commercial	9,904	-6%	-7%	-4%	-5.5%
New work	**23,223**	**-3%**	**-1%**	**2%**	**0.8%**
Housing R&M	5,228	5%	-2%	-1%	-1.5%
Non-housing R&M	4,406	-1%	-1%	0%	-0.9%
Total R&M	**9,634**	**2%**	**-2%**	**-1%**	**-1.3%**
Total work	**32,857**	**-1%**	**-1%**	**1%**	**0.2%**

Source: Experian.
Ref: CSN Explained.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2018-2019 – GREATER LONDON



Source: Experian.
Ref: CSN Explained.

> Construction employment growth in the capital is projected to be marginal at 0.2% a year on average between 2018 and 2022, while annual average expansion of 0.5% is likely for the UK.

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

In the five years to 2022 Greater London's construction output is expected to increase by a yearly average of 1.5%, just above the UK rate of 1.3%.

The infrastructure sector is anticipated to experience the highest annual average growth rate of 7.3%. Post 2019 expansion in the sector is likely to be minimal as the bulk of work on HS2 moves into other regions and therefore output is allocated to that particular region. While HS2 is the largest project in the pipeline, there are also many others that are either taking place or due to start under the forecast period. For example, work continues at Bank station, on the £607m project to substantially upgrade capacity, and is due to complete in 2021. The £400m upgrade at London City Airport is due to commence early this year for completion in 2021. It will provide an extension to the passenger terminal, seven extra stands and a parallel taxiway and deliver increased capacity by 2019. Construction of a 50-metre digital air traffic control tower started in summer 2017 and will be operational in 2019.

Strong latent housing demand and a lack of supply is expected to keep the private housing sector growing at an annual average of 3%, above the UK rate of 2.2%. The capital's housing sector is likely to see stronger expansion towards the second half of the forecast period as Brexit terms become more clear. There are many housing projects that are currently underway or planned over the next five years. Grosvenor has recently announced plans to invest £500m into a former biscuit factory site in Bermondsey to build 1,500 new homes for rent in South London. Aecom has been appointed to take forward the £800m Spire London Tower, set to be the tallest residential development in Western Europe. Once complete the Spire will provide 861 apartments and penthouses. There are also several long-term regeneration developments such as Brent Cross that are anticipated to take place in the five years to 2022.

Output in the public non-housing sector is expected to rise by a yearly average of 1.3%. London's South Bank University has postponed plans for a £1.5bn redevelopment of the Technopark site on its main campus near Elephant and Castle. A spokesperson for the university has stated that the work remains a part of their longer-term plans and will be considered in 2020, on completion of the current planned developments. If construction work on this scheme begins under the forecast period, growth will be much higher.

Output in the capital's commercial sector is predicted to see modest annual average falls of 0.9% 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. However, despite the recovery in the last two years of the forecast period, by 2022 output in the sector is only predicted to be around 90% of its 2016 peak. Southwark Council has given the green light to a 184-metre-tall tower, dubbed the Jenga Tower due to its blocked façade. The 53-storey building will include a hotel, office space, a music venue and private and affordable housing. Plans have been put forward to demolish broadcaster ITV's 45-year old London Television Centre on the South Bank. This will make way for a new ITV headquarters which will consist of new offices and a residential tower block. Demolition work is anticipated to commence in late 2018 with main construction work starting the following year. The project is expected to be complete by 2022/23.

BEYOND 2022

Outside the current forecast period, Crossrail 2 is the largest project in the pipeline. Transport for London had originally intended the public consultation to begin early this year to allow for Crossrail 2's hybrid bill to be submitted in early 2020. However, this consultation has now been delayed until at least the end of this year, thus the timetable for the hybrid bill will almost certainly slip.

In October, due to new evidence, a public consultation on the third runway at Heathrow Airport was reopened for two months. Despite this, the Department for Transport has stated it will be possible to publish a final proposal for the project in the first half of this year, ahead of a vote in parliament. It is hoped construction on the new runway can begin in 2021 with completion in 2025.

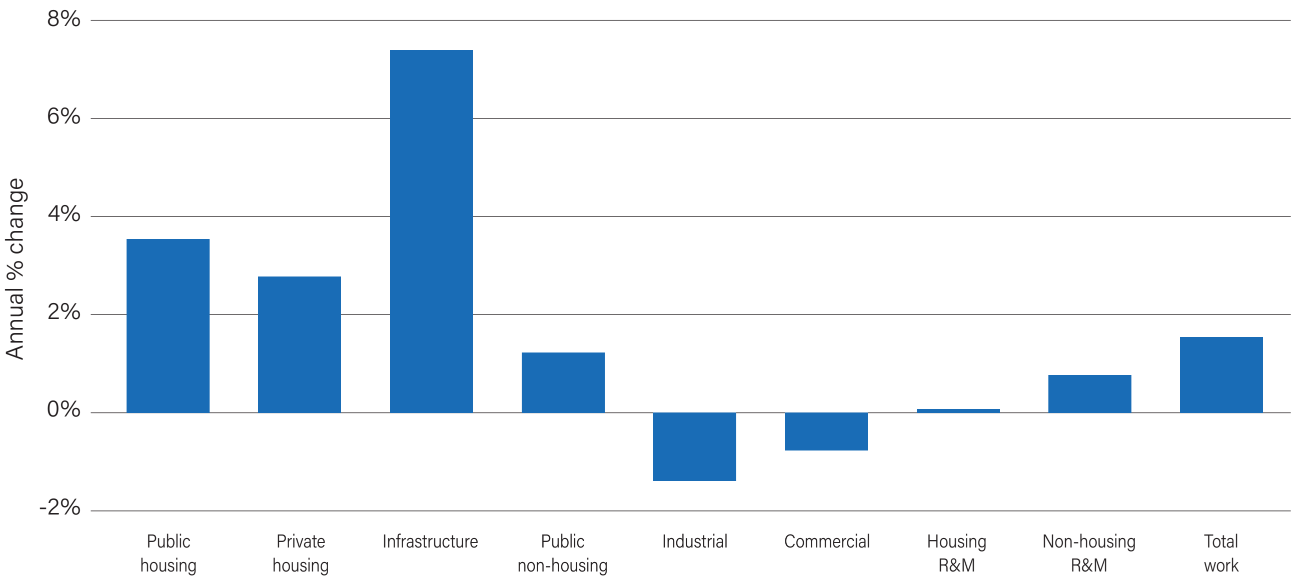
American firm CH2M has been awarded the contract to manage the refurbishment of the Houses of Parliament. The five-year project worth £5bn has an estimated start date of 2023.

CONSTRUCTION OUTPUT – GREATER LONDON (£ MILLION, 2015 PRICES)

	Estimate	Forecast (Annual % change)					Annual average
	2017	2018	2019	2020	2021	2022	2018-22
Public housing	1,792	2%	4%	6%	3%	4%	3.6%
Private housing	6,955	1%	2%	5%	4%	4%	3.0%
Infrastructure	2,543	15%	20%	0%	1%	2%	7.3%
Public non-housing	1,820	4%	3%	0%	-1%	1%	1.3%
Industrial	165	-5%	-5%	-1%	0%	4%	-1.4%
Commercial	9,331	-7%	-4%	-1%	4%	4%	-0.9%
New work	**22,605**	**-1%**	**2%**	**1%**	**3%**	**3%**	**1.9%**
Housing R&M	5,475	-2%	-1%	0%	1%	3%	0.1%
Non-housing R&M	4,367	-1%	0%	3%	2%	1%	0.8%
Total R&M	**9,842**	**-2%**	**-1%**	**1%**	**2%**	**2%**	**0.4%**
Total work	**32,447**	**-1%**	**1%**	**1%**	**3%**	**3%**	**1.5%**

Source: CSN, Experian.
Ref: CSN Explained.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2018-2022 – GREATER LONDON



Source: CSN, Experian.
Ref: CSN Explained.

CONSTRUCTION EMPLOYMENT FORECASTS FOR GREATER LONDON

TOTAL CONSTRUCTION EMPLOYMENT FORECASTS BY OCCUPATION

The table presents actual construction employment (SICs 41-43, 71.1, and 74.9) in Greater London 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 417,660, Greater London accounted for 15.8% of total UK construction employment in 2016. Employment is estimated to have grown by around 2.8% in 2017, similar to the UK rate (2.6%), but over the following five years the capital's construction employment growth rate is projected to slow to a modest 0.2% a year on average. In contrast, at the UK level employment is projected to grow by an annual average of 0.5% over the same time frame. Despite the UK having a lower annual average growth rate in construction output between 2018 and 2022 than Greater London, the UK yearly average employment growth rate is higher. This is because there is stronger expansion in the UK's R&M sectors and as these sectors are more labour intensive, the UK employment rate is higher. London also tends to benefit from higher productivity gains than the UK average.

Over the forecast period, half of the region's occupational categories are expected to see overall growth, with plant operatives projected to see the strongest annual average increase of 3.5%. By 2022, employment in this occupation is likely to reach a new high of 5,420.

In 2022, the largest construction trade occupation in the region is predicted to be the wood trades and interior fit out one, accounting for around 8% of the total workforce. By the end of the forecast period this occupation is likely to be around 80% of its 2015 peak. Electrical trades and installation is anticipated to be the second biggest construction trade occupation accounting for approximately 5% of the total workforce. By 2022, employment in this category is projected to be around 80% of its 2008 peak.

It is generally the case that growth will be stronger in the managerial/administrative and professional occupations and weaker in the trades/manual ones, which is in line with the UK pattern.

TOTAL EMPLOYMENT BY OCCUPATION – GREATER LONDON

Annual recruitment requirement (ARR) by occupation

Non-manual occupations	Total employment 2018	Total employment 2022	ARR
Construction Trades Supervisors	8,450	9,410	360
Senior, executive, and business process managers	31,440	34,790	350
Non-construction professional, technical, IT, and other office-based staff	66,680	71,760	330
Other construction process managers	37,770	39,000	130
Construction Project Managers	13,160	14,140	50
Non–construction operatives	7,650	8,720	–
Manual occupations			
Plant operatives	4,730	5,420	200
Logistics	3,530	3,910	120
Scaffolders	1,770	1,970	70
Wood trades and interior fit-out	36,900	33,200	–
Labourers nec*	18,280	18,230	–
Electrical trades and installation	25,390	21,220	–
Painters and decorators	22,090	18,700	–
Plumbing and HVAC Trades	20,680	17,590	–
Bricklayers	8,090	7,410	–
Plasterers	4,870	4,210	–
Roofers	3,090	2,870	–
Specialist building operatives nec*	9,890	8,880	–
Building envelope specialists	22,200	19,600	–
Steel erectors/structural fabrication	2,330	2,010	–
Glaziers	4,200	3,920	–
Plant mechanics/fitters	2,930	2,480	–
Floorers	3,090	2,750	–
Civil engineering operatives nec*	1,780	1,920	–
Professional occupations			
Civil engineers	10,900	11,860	400
Other construction professionals and technical staff	28,020	30,440	–
Surveyors	16,970	17,850	–
Architects	17,320	19,020	–

*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 2,010, Greater London's annual average recruitment requirement, represents just 0.5% of base 2018 employment. The corresponding ARR rate for the UK is higher at 1.2%. London traditionally has a very low ARR as it naturally acts as a magnet for the construction workforce from other areas of the country and overseas. However, this still means that the capital needs to recruit over 10,000 new entrants in the next five years, over and above normal flows.

The occupations under some pressure are likely to be construction trade supervisors, plant operatives, logistics personnel, civil engineers and scaffolders, all with ARR ratios to base 2018 employment of 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 – GREATER LONDON

	2018-2022
Non-manual occupations	
Non-construction professional, technical, IT, and other office-based staff	330
Other construction process managers	130
Senior, executive, and business process managers	350
Construction trades supervisors	360
Construction project managers	50
Manual occupations	
Wood trades and interior fit-out	–
Labourers nec*	–
Electrical trades and installation	–
Painters and decorators	–
Plumbing and HVAC Trades	–
Bricklayers	–
Plant operatives	200
Logistics	120
Plasterers	–
Roofers	–
Scaffolders	70
Specialist building operatives nec*	–
Building envelope specialists	–
Steel erectors/structural fabrication	–
Glaziers	–
Plant mechanics/fitters	–
Floorers	–
Civil engineering operatives nec*	–
Professional occupations	
Other construction professionals and technical staff	–
Civil engineers	400
Surveyors	–
Architects	–
Total (SIC 41-43)	**1,610**
Total (SIC 41-43, 71.1, 74.9)	**2,010**

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.

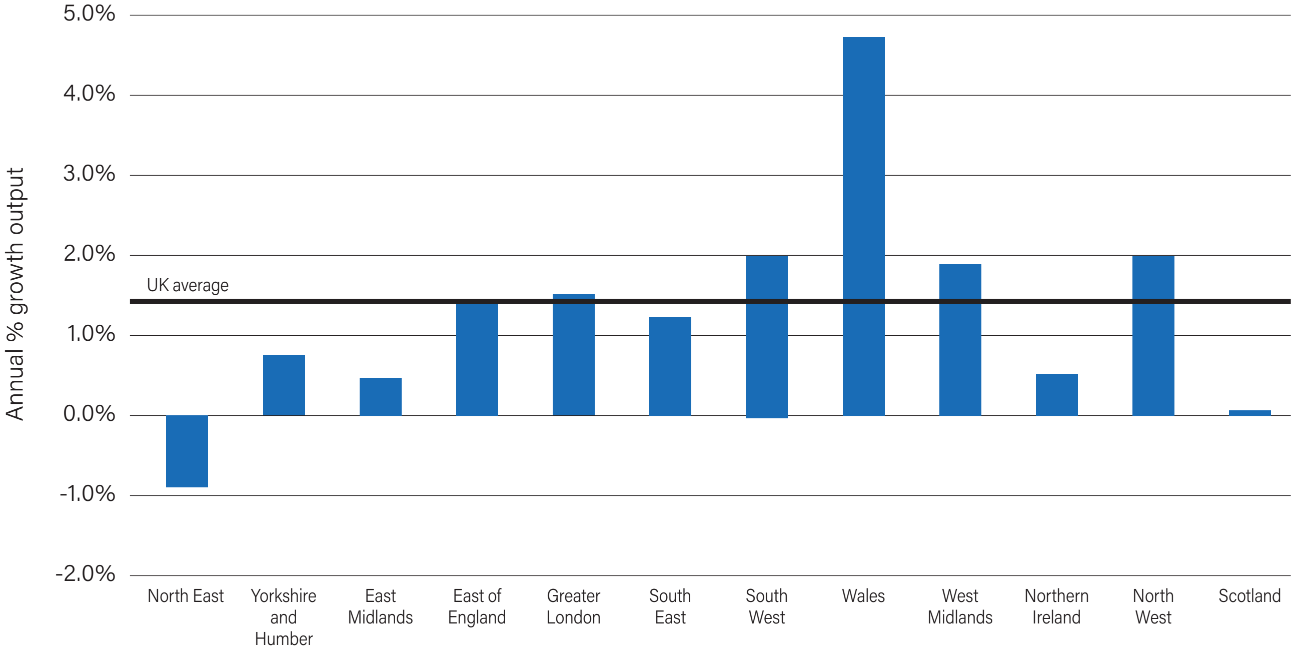
It is the case across the English regions that growth in the construction sector will tend to reflect expansion in the wider economy, unless the region benefits from the siting of major infrastructure projects. Both the South West and North West, which lead the English region growth rankings with 2% 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%.

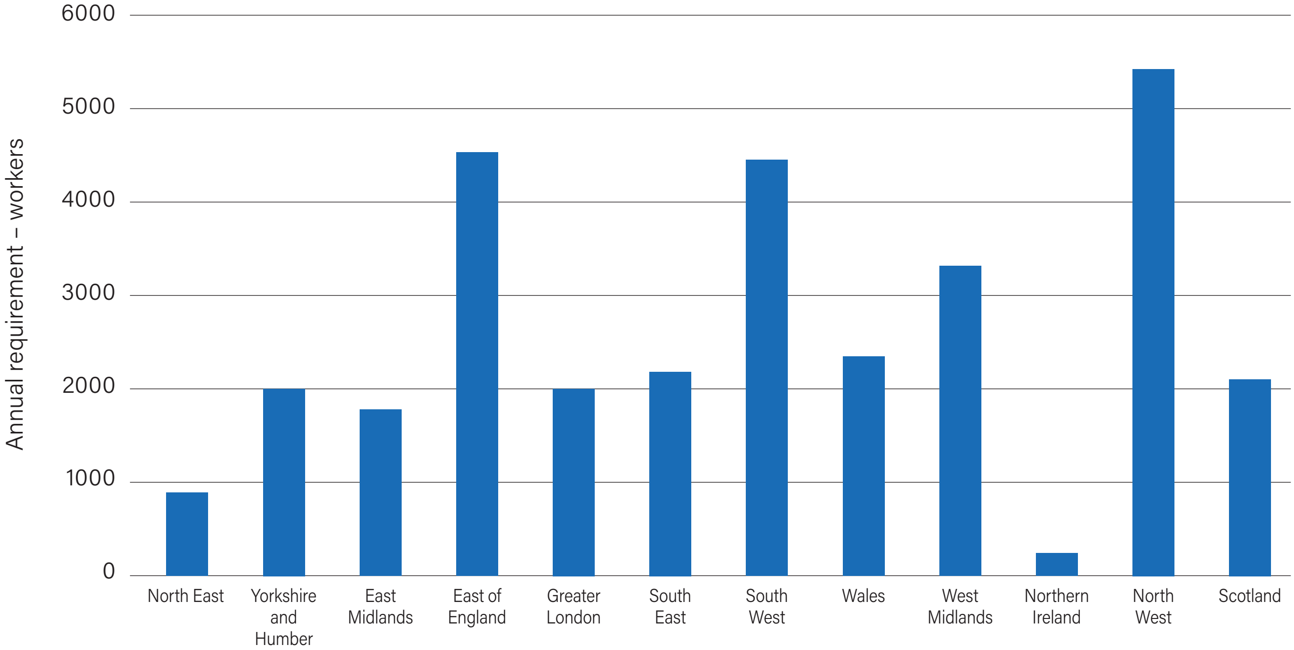
As the annual recruitment requirement (ARR) takes into account known supply-side factors, such as intra-regional labour movements and movements between other industries and construction, the pattern can look significantly different to the profile of output and employment, as some regions and devolved nations have historically strong net inflows and some suffer from large net outflows. For the 2018 to 2022 period, the largest absolute ARRs 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.

> The ARR for Greater London is estimated at 2,010 a year on average, representing 0.5% of base 2018 employment, below the UK rate of 1.2% and the joint lowest relative to the size of its construction market in the UK.

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:

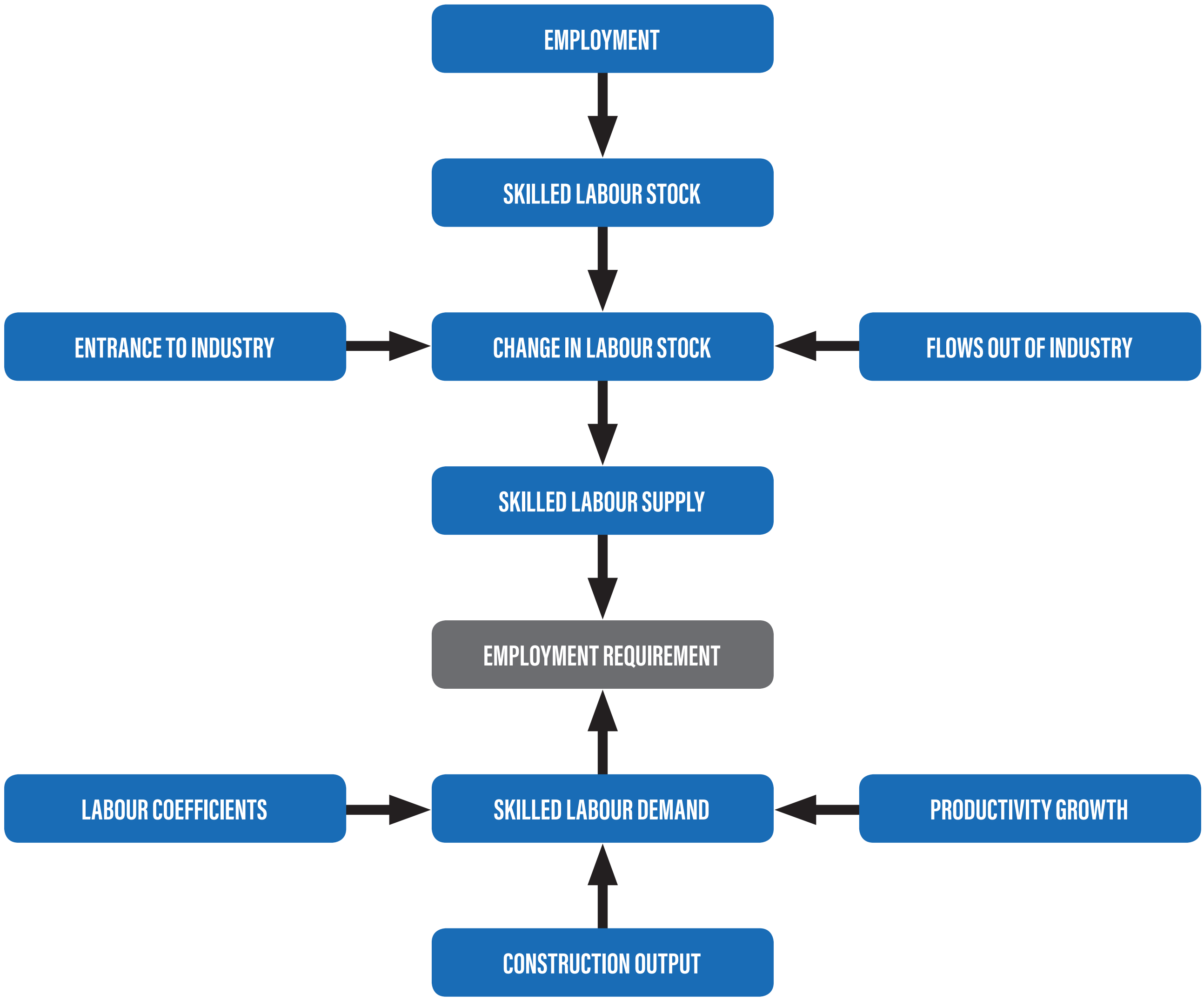
- Transfers to other industries
- International/domestic out migration
- Permanent retirements
  (Including permanent sickness)
- Outflow to temporary sickness and home duties.

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 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[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]

[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

CITB RESEARCH

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