In association with

INDUSTRY INSIGHTS

Construction Skills Network

Forecasts 2017–2021

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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FOREWORD

CITB's latest Construction Skills Network forecast for 2017-2021 could not come at a more crucial juncture for our sector.

It's great news to see output holding firm in the face of the enormous political and economic upheaval of the last 12 months. But the sector's continuing growth – forecast to average 1.7% over five years – brings its own unique sets of challenges.

When it comes to skills and labour, we know we are facing a shortfall if we are going to keep up with demand. While the Government is starting to address this with a push for more new apprenticeships, we know that – valuable as these opportunities are - they are only part of the answer.

Alongside the need to train a new generation of construction workers, we also need to develop the existing workforce if we are to meet the challenges coming down the road. This can be done through training and apprenticeships for existing workers, but it also means supporting people and organisations to develop new and better skills.

Above all else, we need to be able to plan for the future with as much certainty as possible by anticipating future need. It's not just about delivering what we are doing today, but thinking seriously about what we need to do tomorrow. As a sector, we need to be proactive, not reactive, to close the skills supply gap.

That's why the data we have collected in this report is such a vital tool both for us and our industry.

In an environment where margins are still tight and the uncertainty over Brexit means that investment decisions have to be weighed even more carefully than usual, a solid evidence base is essential.

I believe that well-planned and properly funded training programmes are crucial to the continuing success of our sector. With the robust data collected here, we can design appropriate future training programmes with a good degree of confidence that there will be a strong pipeline of work. We can also direct CITB funding to the most-needed skills, and use it to support innovative, industry-led training projects.

I know how great the work we do in this sector is. The task we face today is to ensure we have the people and resources to maintain these high standards in a challenging environment.

This research gives the industry the tools to take on this challenge with confidence.

Sarah Beale
Chief Executive

> "As a sector, we need to be proactive, not reactive, to close the skills supply gap. That's why the data we have collected in this report is such a vital tool for our industry."

THE OVERVIEW

Having come through a year of unprecedented political and economic uncertainty, the early indications are that the construction sector will continue to grow from 2017 to 2021, with infrastructure spend carrying much of the weight in the coming years.

While the outlook appears mixed, this is not unexpected given the high degree of uncertainty in the wider UK and global economy.

On the positive side of the ledger, construction output in 2016 was expected to have exceeded its pre-financial crisis peak of 2007. However, the growth in output in 2016 was not at the same level as the previous two years.

For the period up until 2021, construction output is anticipated to grow at an average of 1.7%, just below the 1.8% expected average GDP growth. Average construction employment, meanwhile, is expected to grow at just 0.6% over the next five years, slower than in the recent past and below the 1.1% predicted for the 2016 to 2020 period a year ago.

That 1.7% expected annual average growth in construction is also significantly down on the 2.5% forecast just 12 months ago for the 2016-2020 period. The economic slowdown and ongoing political uncertainty has undoubtedly affected the forecast, especially in the early years. Yet, with long-term pipeline infrastructure projects finally coming to fruition, construction remains in good shape to weather potentially difficult economic headwinds.

RISKS AND OPPORTUNITIES

All predictions for the construction sector are made against a backdrop of ongoing political and economic uncertainty.

The impact on the construction pipeline of Britain's vote to leave the European Union is one of the most significant unknowns. Fears have already been voiced in some quarters about the long-term supply of capital and labour into the UK following Brexit, both of which could dampen output.

That said, UK GDP has held up relatively well since the Brexit vote, stabilising at around 2% throughout 2016, while inflation is set to peak at 2.5% in 2017.

As wider economic turbulence can affect many parts of construction, the commitment to infrastructure is helpful to the forecast. But, with output growth so reliant on these major projects, any shifting of the goalposts on, for example HS2 or nuclear new build could be felt throughout the industry. If, for example, Hinkley was taken out of the pipeline, total construction output for 2021 would be 0.8% lower than currently predicted.

And the reliance on large infrastructure projects means that forecasts, particularly those made over the longer term, are less balanced than in the past. Infrastructure will account for 45% of construction output growth over the forecast period.

However, the changing of the guard at the top of government in the UK has, so far, not affected its commitment to the National Infrastructure Delivery Plan. The government is still pledged to invest over £100 billion in infrastructure by 2021.

Profitability remains a concern, with the volatility of material and labour costs squeezing margins. The situation is not helped by deteriorating levels of productivity, and there is also the prospect of a potential gap in the labour market resulting from any changes to immigration policy.

CONSTRUCTION INDUSTRY STRUCTURE 2016

UK

Public housing

4%

Private housing

18%

Infrastructure

15%

Public non-housing

7%

Industrial

3%

Commercial

18%

Housing R&M

18%

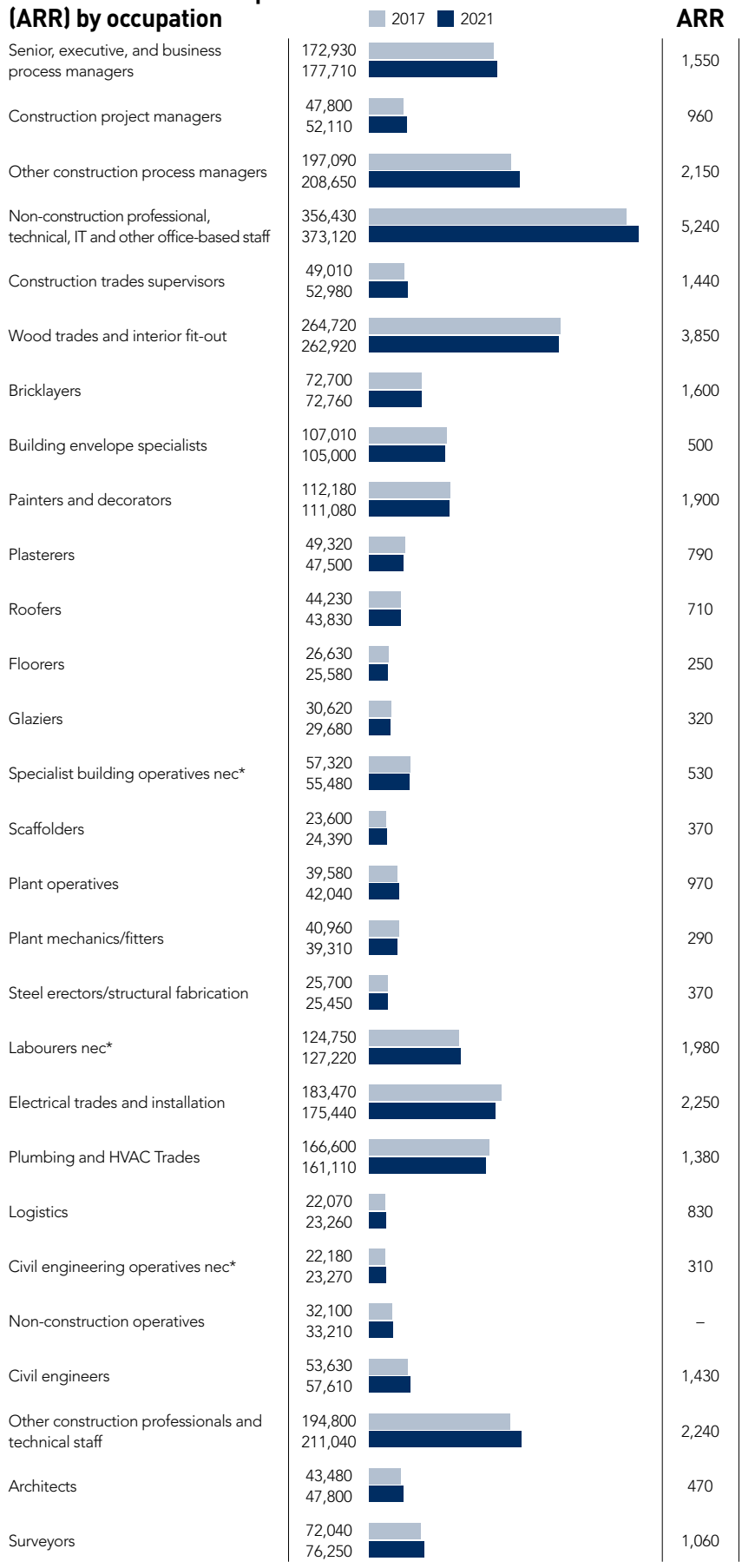
Non-housing R&M

17%

Source: ONS, Experian.

TOTAL EMPLOYMENT BY OCCUPATION – UK

Annual recruitment requirement (ARR) by occupation



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

SECTORS

Across the UK, growth between 2017 and 2021 is likely to be driven chiefly by the infrastructure sector, with a number of landmark projects due to get underway.

HS2 and new nuclear power stations at Wylfa and Hinkley Point are the largest of the major projects that significantly boost infrastructure output in the short term. These are underpinned by a range of smaller and medium-sized infrastructure projects in road, rail and utilities. Annual average output growth for the infrastructure sector is expected to be 5.4% over the five years, with 2019 expected to deliver growth at an impressive 10%.

Infrastructure's share of total construction output is predicted to grow from 13.7% in 2016 to 16.3% in 2021.

Private housing is the next best performing sector over the period, with average growth anticipated at 2.2%, aided by the government's firm support for new build starter homes. The commercial sector is predicted to bounce back from a 1.0% decline in 2017 to average growth of 1.2% over the next five years.

Public sector work is likely to stagnate over the forecast period. Public housing output will grow at an average of 1.0% up to 2021, but public non-housing growth is expected to average just 0.8% annually. This marks a backwards step following an increase in output during 2016 that represented the first year of growth in public non-housing since 2010.

The industrial sector is likely to be the weakest performing of all, averaging a 1.4% decline. While the manufacturing sector may benefit from higher exports on the back of weak sterling, this impact is likely to be more than counteracted by slower domestic demand growth. As a result, the overall impact on factory construction is likely to be negative. This combined with slower demand for distribution and logistics facilities means that there will be no growth in the sector over the early part of the forecast period.

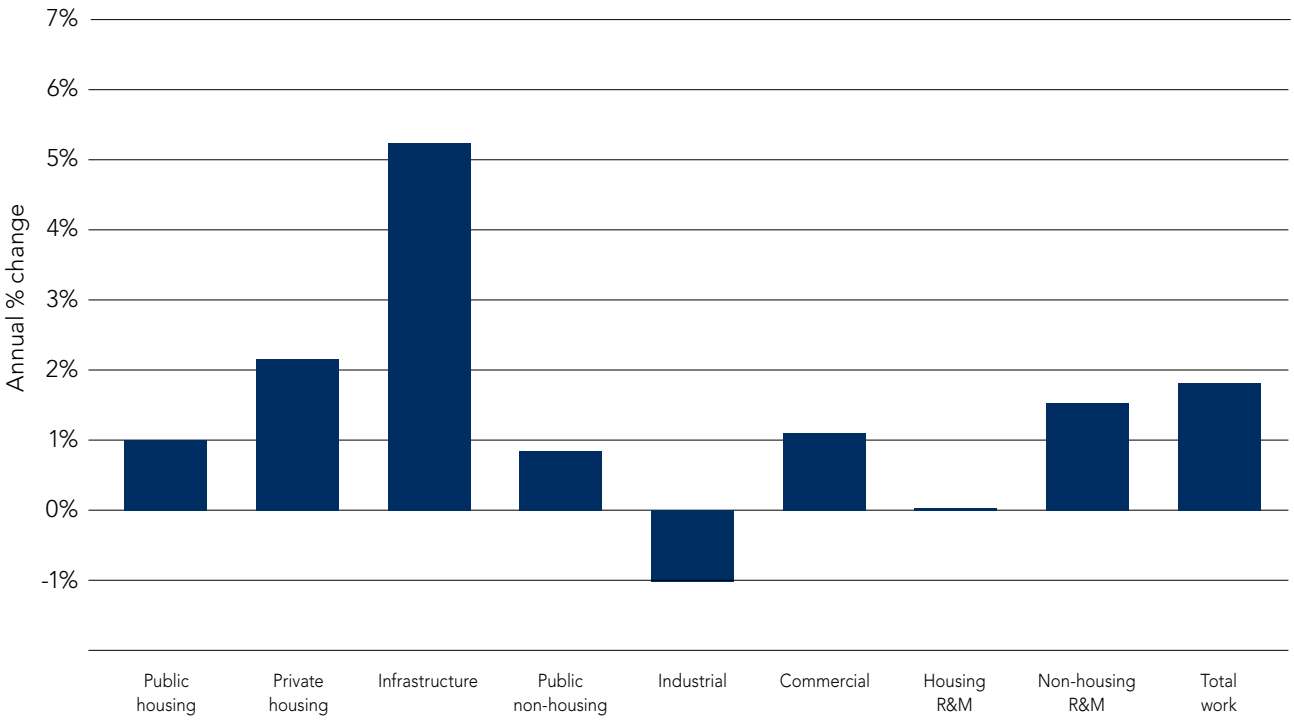
Total new work across all sectors will grow at an average of 2.3%, but the overall output growth is reduced to 1.7% by the repair and maintenance sector, where growth will average just 0.8%. Housing R&M will actually contract by 2.0% in 2017, with little growth up to 2021. Non-housing R&M across the public and private sector is predicted to grow at an average of 1.5% over the five years.

CONSTRUCTION OUTPUT – UK (£ MILLION, 2013 PRICES)

	Estimate	Forecast annual % change					Annual average
	2016	2017	2018	2019	2020	2021	2017-2021
Public housing	4,298	0%	0%	3%	0%	2%	1.0%
Private housing	26,745	3%	2%	2%	2%	2%	2.2%
Infrastructure	18,739	5%	5%	10%	4%	3%	5.4%
Public non-housing	10,278	2%	2%	0%	-3%	3%	0.8%
Industrial	4,053	-5%	-3%	1%	0%	0%	-1.4%
Commercial	25,059	-1%	2%	3%	1%	1%	1.2%
New work	**89,173**	**2%**	**2%**	**4%**	**1%**	**2%**	**2.3%**
Housing R&M	24,429	-2%	0%	1%	1%	0%	0.0%
Non-housing R&M	23,513	1%	1%	2%	2%	1%	1.5%
R&M	**47,942**	**0%**	**1%**	**2%**	**2%**	**1%**	**0.8%**
Total work	**137,115**	**1%**	**2%**	**3%**	**1%**	**1%**	**1.7%**

Source: CSN, Experian.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017–2021 – UK



Source: CSN, Experian.

EMPLOYMENT

In 2016, the number of people working in construction is expected to have risen above 2.6 million for the first time since 2009. Growth in the construction workforce was around 1.2%, taking the overall rise over the last three years to nearly 5.0%, or the equivalent of 121,000 jobs according to the Labour Force Survey.

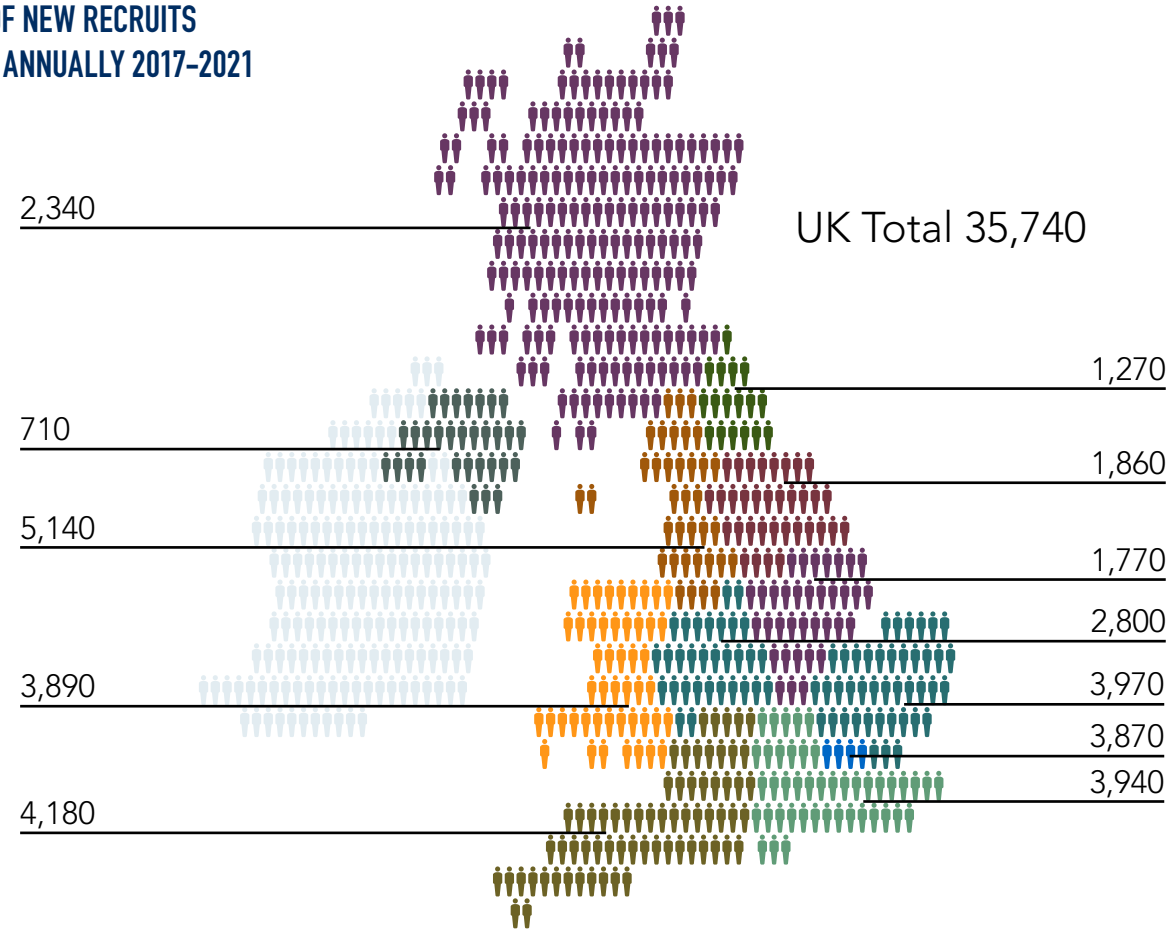
Looking ahead, the projected annual recruitment requirement (ARR) for the period from 2017 to 2021 is 35,740 across the industry. That figure represents a fall of 23.0% from last January's projected ARR of 46,500 for the 2016 to 2020 period, but an increase from our interim post-Brexit forecast in November.

The fall in recruitment requirement suggests that the pressure on skills may have eased slightly. This could be down to the relative slowdown in output growth anticipated over the next five years. The stronger performance of infrastructure, which is typically less labour intensive than other sectors, could also be a factor.

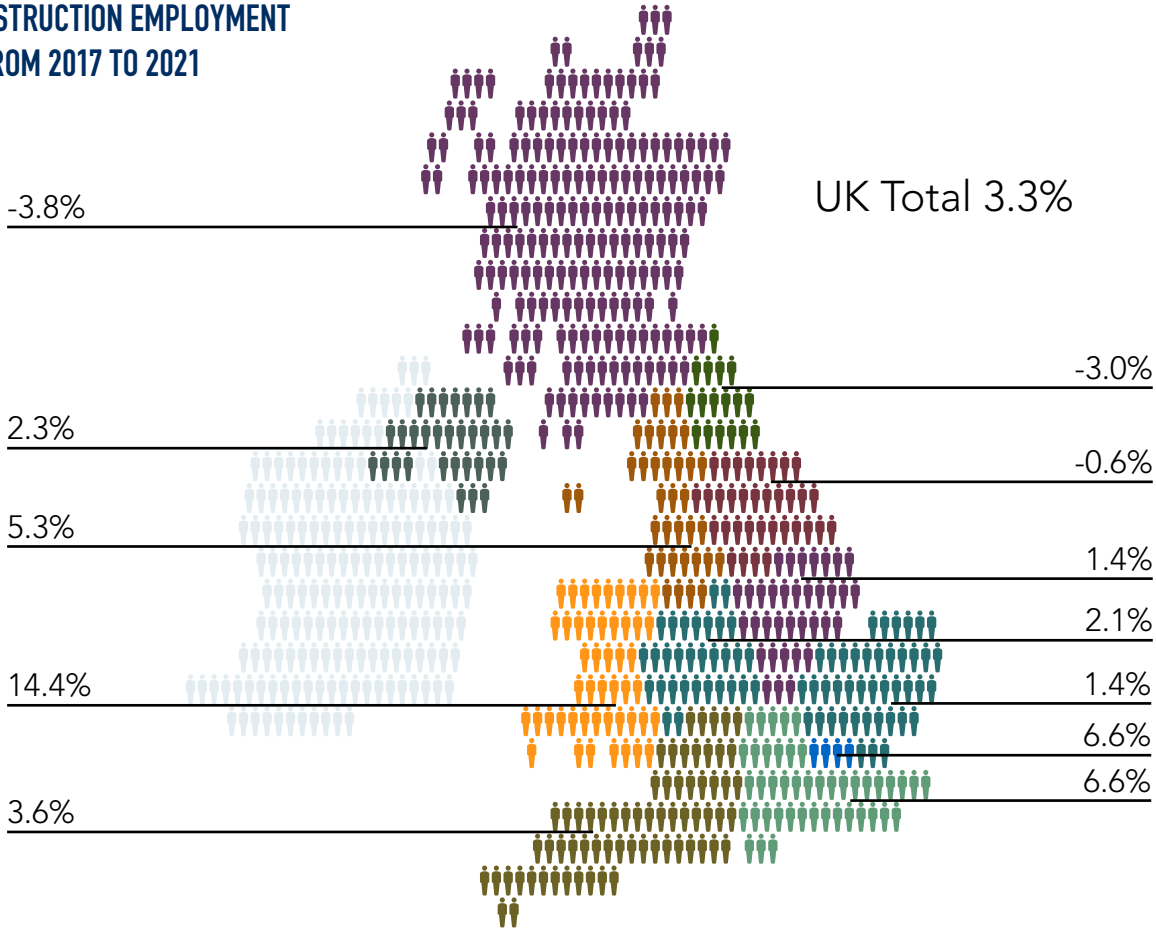
That said, there is little doubt that the industry continues to experience short-term skills issues and growing skills needs in the medium term.

There are a number of specialist trades in which demand is expected to be particularly high in the coming years. In terms of overall numbers, the largest ARRs are predicted for wood trades and interior fit out (3,850), electrical trades and insulation (2,250), and other construction professionals and technical staff (2,240). Taken as a proportion of base 2017 employment levels, the highest ARRs are for logistics personnel (3.8%), construction trades supervisors (2.9%), and civil engineers (2.7%).

NUMBER OF NEW RECRUITS REQUIRED ANNUALLY 2017-2021



TOTAL CONSTRUCTION EMPLOYMENT GROWTH FROM 2017 TO 2021



NATIONS AND REGIONS

The mixed UK picture carries through when comparing the devolved nations and regions, particularly with major infrastructure schemes likely to have the biggest influence over the coming five years.

On output alone, Wales is the star performer of the home nations. Average annual output growth is expected to reach 6.2% in Wales, more than three times the growth rate of the UK as a whole. Welsh output is considerably boosted by the expected start of work at Wylfa, as well as the upgrade of the M4 around Newport.

By contrast, output in Scotland is expected to fall by an average of 0.4%, making it the weakest performer overall. However, a vital caveat is that Scotland is experiencing a sharp fall in infrastructure output from its current high level as a number of large road and rail projects will complete over the next two years. These include the Queensferry Crossing, the Aberdeen Western Peripheral Route, and major upgrade work on the M8, M73 and M74.

In Northern Ireland, annual growth up until 2021 is expected to almost match that of the UK as a whole, standing at 1.6% compared to the 1.7% national figure.

Variation across the English regions closely maps the location of some of the larger infrastructure projects due to get underway. The South West is expected to experience the highest growth of all English regions (3.1%) largely on the back of the expected start of construction at Hinkley.

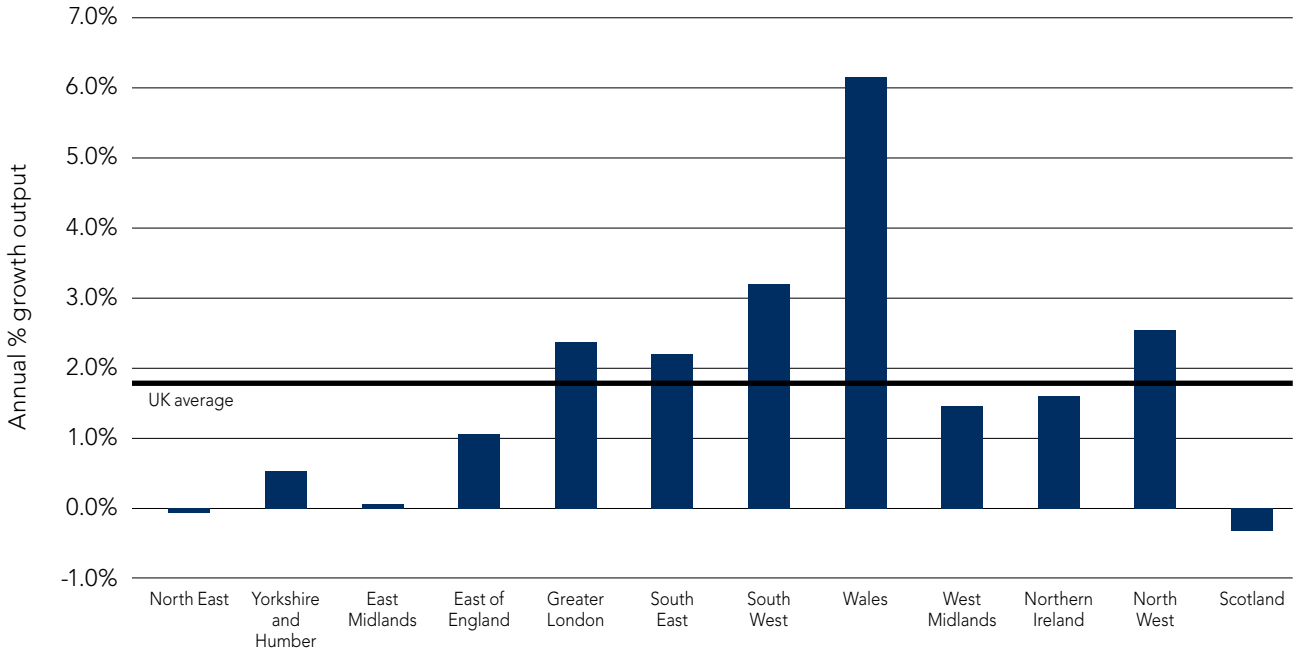
The North West (2.5%), Greater London (2.4%) and the South East (2.2%) are expected to experience the next biggest growth spurts. Transport projects, in particular the start of work on HS2, are the biggest drivers for growth in all three regions. However, London is also expected to see growth in the commercial sector and private housing.

Growth in the North West will also be aided by the proposed nuclear facility at Moorside, while the South East will see the start of construction on the £2bn London Paramount 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.

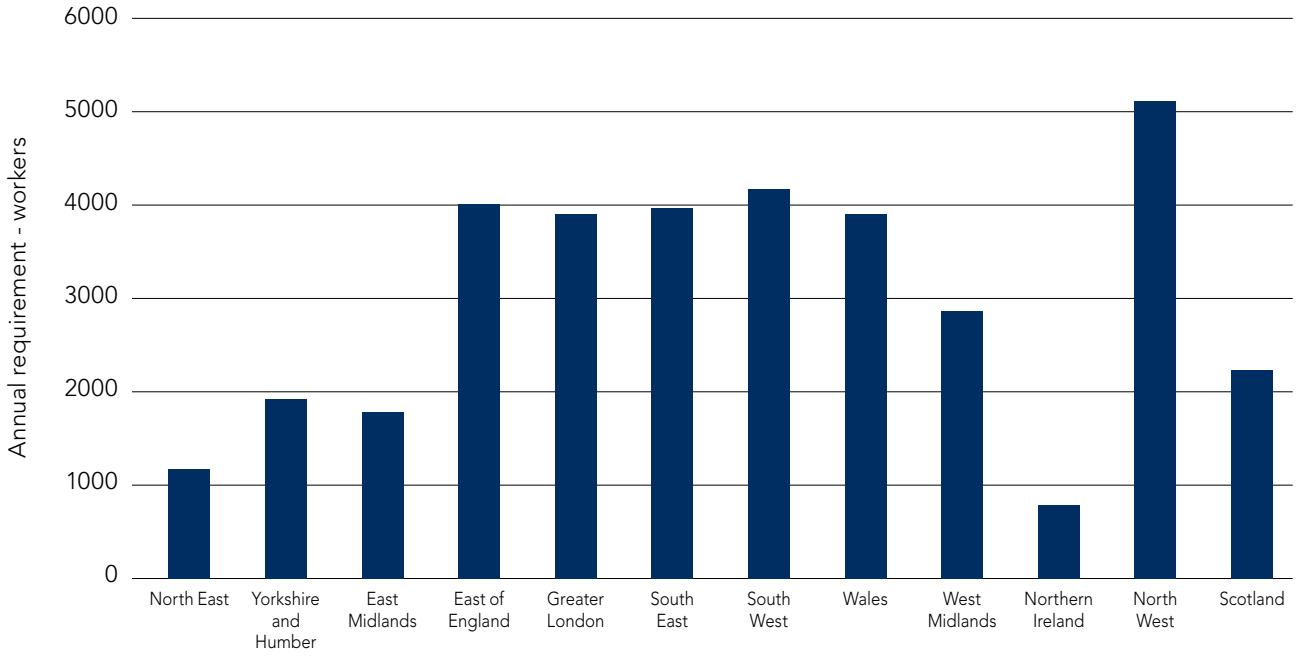
Annual average employment growth more or less mirrors output in the various regions. Employment growth is expected to range from a high of 2.7% in Wales to a low of -0.8% in Scotland, in comparison with a UK average of 0.6% growth.

ANNUAL AVERAGE OUTPUT GROWTH BY REGION 2017-2021



Source: CSN, Experian.
Ref: CSN Explained.

ANNUAL RECRUITMENT REQUIREMENT (ARR) BY REGION 2017-2021



Source: CSN, Experian.

> Average construction employment is expected to grow at just 0.6% per year over the forecast period.

WALES

Wales is projected to see annual average output growth of 6.2% over the 2017 to 2021 period, down from the 7.1% projected last year for the 2016 to 2020 period, but still a very robust increase. Growth in Wales is expected to outstrip that for the UK as a whole by a considerable margin (1.7%). Based on the expansion in output, employment is expected to grow at an annual average rate of 2.7%, again well above the UK rate of 0.6%. Wales's annual average recruitment requirement (ARR) is estimated at 3,890, which represents 3.4% of base 2017 employment.

Growth in the infrastructure sector

16%

a year on average

Employment is forecast to grow by

2.7%

a year on average

Wales has an ARR of

3,890

KEY FINDINGS

Construction output is estimated to have grown for the fourth successive year in 2016, reaching £4.8bn in 2013 prices. However in real terms it is still some 15% lower than its 2004 peak of nearly £5.7bn. Growth last year is likely to have been fairly moderate at around 2%, driven largely by strong expansion in the private housing and commercial sectors, the latter starting to recover from a very low base.

Wales is projected to see annual average output growth of 6.2% over the five years to 2021, the strongest of any of the English regions and devolved nations. This expansion will be driven in no small part by very strong growth in the infrastructure sector, of nearly 16% a year on average, predicated on the start of work on new nuclear build at Wylfa Newydd during the forecast period. The sector will also benefit from a significant road improvement programme, in which the largest scheme will be the M4 upgrade around Newport, currently scheduled to start in 2018.

While house price growth in Wales is projected to be very moderate over the forecast period, there are a number of projects on site or in the pipeline that should lead to growth in output in both the public and private sectors, such as the 'urban village' on the site of Ely paper mill in Cardiff and Taylor Wimpey's Torfaen development. Decent growth is also forecast for the public non-housing and commercial sectors, the former largely driven by health projects and the latter continuing to recover from its current low level.

Employment growth is projected to average 2.7% a year between 2017 and 2021, well above the UK rate of 0.6%, with the Welsh construction workforce reaching close to 128,000 by 2021, making it, along with the South East, the only region/devolved nation in which employment will exceed its 2008 peak. Demand is expected to be strongest for construction trades supervisors and civil engineering operatives nec., both with annual average growth rates of over 4%. Overall, growth will be fairly evenly spread across the major occupational categories – managerial/supervisory, professional, and trades.

Wales's ARR is estimated at 3,890, the fifth largest requirement on an absolute level and the highest as a ratio of base 2017 employment (3.4%). This is well above the UK ratio of 1.4%. Wales traditionally suffers from high net outflows of its construction workforce to other areas of the UK, in particular to the South West and North West of England, and thus tends to have a high relative ARR.

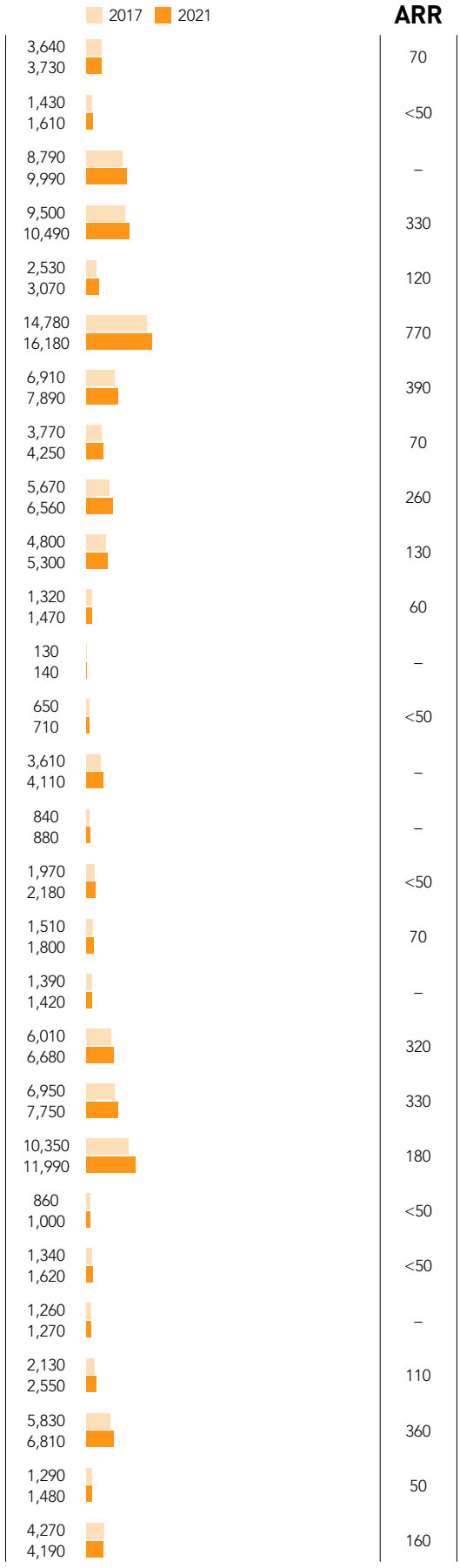
CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	Wales
Public housing	4%	3%
Private housing	18%	13%
Infrastructure	15%	27%
Public non-housing	7%	12%
Industrial	3%	3%
Commercial	18%	10%
Housing R&M	18%	18%
Non-housing R&M	17%	14%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – WALES

Annual recruitment requirement (ARR) by occupation



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

SCOTLAND

Construction output in Scotland is projected to contract by 0.4% a year on average in the five years to 2021, one of only two regions/devolved nations in which it is expected to fall. The decline in output will lead to a drop in construction employment, put at 0.8% a year on average over the forecast period. However, there will still be a need to attract new recruits to the industry. Scotland's annual recruitment requirement (ARR) is currently estimated at 2,340, representing 1% of base 2017 employment.

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

5.7%

Employment is forecast to decline by

0.8%

a year on average

Scotland has an ARR of

2,340

KEY FINDINGS

After three years of growth which took output in Scotland to a new high in 2015, activity is estimated to have subsided in 2016. Weak outturns for the public housing, industrial and, in particular, the infrastructure sector impacted overall performance.

What happens to infrastructure will continue to affect the overall growth of construction in Scotland during the course of the forecast period. Infrastructure output hit an estimated £3.9bn (2013 prices) in 2015, around three times its long-term average (1990–2014), driven by a host of major transport projects, such as the Queensferry Crossing. A lot of these schemes are due to be completed over the next couple of years, leading to sharp declines in output, of over 6% a year on average, in the sector over the five years to 2021.

This decline in infrastructure activity will drag down overall construction performance and the industry in Scotland is projected to contract by around 0.4% a year on average between 2017 and 2021. Most of the other sectors are expected to experience growth, with the exception of the industrial sector, and if infrastructure was excluded then output would average growth of 1.0% a year.

The housing sector in particular should be boosted by the Scottish Government's aspiration for 50,000 new affordable homes by 2020/21, 35,000 of which would be for social rent. While a cautious position has been taken on the fulfilment of this aspiration, the drive to reach this target should provide the impetus for growth in new house building.

A decline in output inevitably means a fall in employment, which is projected to contract by 0.8% a year on average in the five years to 2021. The lagged effect between output and employment means that employment is likely to grow in 2017 before declining thereafter. Construction employment is projected to total around 215,000 in 2021, some 8,400 below the estimated 2016 level and over 37,000 below its 2008 peak. The main trades are expected to take the brunt of the falls with the managerial/supervisory and professional occupational categories faring better.

Despite the projected falls in employment, the need to replace those leaving the industry means that Scotland still has an annual recruitment requirement (ARR), estimated at 2,340 a year to 2021. This represents 1% of base projected 2017 employment, a lower ratio than the UK's, at 1.4%.

CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	Scotland
Public housing	4%	5%
Private housing	18%	11%
Infrastructure	15%	29%
Public non-housing	7%	10%
Industrial	3%	2%
Commercial	18%	16%
Housing R&M	18%	12%
Non-housing R&M	17%	15%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – SCOTLAND

Annual recruitment requirement (ARR) by occupation

Occupation	2017	2021	ARR
Senior, executive, and business process managers	13,560	12,690	–
Construction project managers	3,540	3,580	70
Other construction process managers	14,950	15,160	150
Non-construction professional, technical, IT and other office-based staff	29,870	29,310	500
Construction trades supervisors	4,280	4,220	170
Wood trades and interior fit-out	21,070	18,380	70
Bricklayers	6,400	5,900	50
Building envelope specialists	4,250	3,770	–
Painters and decorators	9,750	8,720	130
Plasterers	3,050	2,690	–
Roofers	3,860	3,680	–
Floorers	2,160	1,930	–
Glaziers	2,530	2,350	–
Specialist building operatives nec*	3,820	3,450	–
Scaffolders	2,430	2,320	<50
Plant operatives	3,890	3,860	70
Plant mechanics/fitters	4,020	3,620	–
Steel erectors/structural fabrication	1,900	1,780	<50
Labourers nec*	12,030	11,720	300
Electrical trades and installation	17,370	15,710	–
Plumbing and HVAC Trades	11,420	10,640	310
Logistics	2,200	2,150	110
Civil engineering operatives nec*	2,980	2,850	<50
Non-construction operatives	3,670	3,620	–
Civil engineers	7,220	7,500	350
Other construction professionals and technical staff	23,430	22,560	–
Architects	3,920	3,900	–
Surveyors	6,470	6,730	–

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

NORTHERN IRELAND

Northern Ireland is projected to see annual average output growth of 1.6% over the 2017 to 2021 period, roughly in line with the UK rate of 1.7%. The new work sector, which the Northern Ireland construction industry is more heavily skewed towards than the UK's, is expected to fare better than the repair and maintenance sector (R&M), with growth rates of 1.8% and 1% respectively. This level of output growth should generate expansion in employment of around 0.4% a year on average, a little less than the UK rate (0.6%). Northern Ireland's annual average recruitment requirement (ARR) is estimated at 710, 1.1% of base 2017 employment.

Long term growth is expected to focus on the Public housing sector at

6.1%

Employment is forecast to grow by

0.4%

a year on average

Northern Ireland has an ARR of

710

KEY FINDINGS

2015 was the first year since 2007 that Northern Ireland's construction industry has finally seen some decent growth, largely driven by good performances in the housing and public non-housing sectors. Strong growth has not been sustained in 2016, however, with the outturn for the year as a whole likely to show a modest fall.

The industry is expected to return to growth in 2017 and expand by an annual average of 1.6% over the five years to 2021, close to the UK rate of 1.7%. These are lower growth rates for both the devolved nation and the UK than those predicted last year for the 2016 to 2020 period as the events of 2016 have injected a considerable amount of global uncertainty into the system, leading to more cautious predictions for the economic outlook.

Both the housing sectors are projected to see decent growth over the forecast period, the public one driven by the Northern Ireland Executive's commitment to fund the construction of 1,600 new homes for social rent over the next few years. The private house building sector is bouncing back from a relatively low level of activity with a number of large developments in the pipeline, such as the 1,000 unit Rivenwood estate (Newtownards), although it is unlikely to ever approach the output seen in the mid-2000s. Commercial construction is expected to be the other main sector of growth, with Belfast in particular attracting increasing levels of investment in the offices and leisure sub-sectors.

Employment growth is projected to average 0.4% a year over the 2017 to 2021 period, a little below the UK rate of 0.6%. The difference between the annual average output and annual average employment growth rates implies a productivity gain of around 1.2% a year in Northern Ireland, slightly higher than the implied UK gain of 1.1%. However, different construction sectors are more or less labour intensive and thus changes in 'implied' productivity may reflect relative sector growth rather than any change in 'real' productivity.

Northern Ireland's ARR, at 710 for the 2017 to 2021 period, represents 1.1% of base 2017 employment, a little lower than the UK ratio of 1.4%. This is a significantly lower ARR than estimated last year for 2016 to 2020. The highest requirement in terms of ratio to base employment is for some of the main trades, in particular bricklayers (6.3%) and roofers (5.2%). It will be critical for an acceptable modus vivendi in relation to the operation of the new Apprenticeship Levy in Northern Ireland to be worked out to ensure that training provision is able to meet labour requirements in the industry going forward.

CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	Northern Ireland
Public housing	4%	7%
Private housing	18%	18%
Infrastructure	15%	17%
Public non-housing	7%	20%
Industrial	3%	3%
Commercial	18%	8%
Housing R&M	18%	10%
Non-housing R&M	17%	17%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – NORTHERN IRELAND

Annual recruitment requirement (ARR) by occupation

Occupation	2017	2021	ARR
Senior, executive, and business process managers	3,400	3,340	–
Construction project managers	930	1,030	<50
Other construction process managers	4,810	5,080	70
Non-construction professional, technical, IT and other office-based staff	6,700	6,420	–
Construction trades supervisors	970	1,070	–
Wood trades and interior fit-out	9,590	10,280	140
Bricklayers	2,680	3,080	170
Building envelope specialists	1,130	1,210	<50
Painters and decorators	2,980	3,080	50
Plasterers	2,030	1,970	50
Roofers	970	1,130	50
Floorers	260	270	<50
Glaziers	550	520	–
Specialist building operatives nec*	700	720	–
Scaffolders	280	280	–
Plant operatives	1,780	1,760	<50
Plant mechanics/fitters	750	790	<50
Steel erectors/structural fabrication	200	180	–
Labourers nec*	3,730	3,520	–
Electrical trades and installation	4,830	4,560	–
Plumbing and HVAC Trades	3,610	3,330	–
Logistics	520	580	–
Civil engineering operatives nec*	540	530	–
Non-construction operatives	200	210	–
Civil engineers	2,480	2,430	–
Other construction professionals and technical staff	3,240	3,630	70
Architects	1,720	1,950	–
Surveyors	1,030	1,110	–

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

NORTH EAST

The region's total construction output is forecast to stagnate over the next five years. In contrast, overall UK output is likely to grow by an annual average of 1.7%. The North East's construction employment is anticipated to decrease by an average yearly rate of 0.6% although at 1.3% of base 2017 employment, the region's annual recruitment requirement (ARR) is similar to the UK rate of 1.4%.

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

8.2%

Employment is forecast to decline by

0.6%

a year on average

The North East has an ARR of

1,270

KEY FINDINGS

With an annual average decline of 0.1% over the five years to 2021, the North East's total construction output is predicted to experience stagnation. This is one of the weakest outlooks across the UK regions and devolved nations.

The infrastructure sector is expected to grow strongly in the short term, by over 8% a year on average in 2017 and 2018 due to the start of main works on MGT Power's £650m Tees Renewable Energy Plant. However the outlook for the sector is poor in the second half of the forecast period as at present there aren't any sizeable schemes in the pipeline post 2018.

In the five years to 2021 the commercial market is likely to experience annual average expansion of 1.5%. This sector is believed to be the most vulnerable to the impact of the referendum vote over the near term. Survey evidence continues to suggest that investment intentions have been hit following the EU referendum vote and this is likely to translate into cuts in business investment over the coming quarters. However, as the dust settles and there is more certainty around what Brexit will actually look like, confidence is likely to return. Thus, growth is predicted from 2019 onwards.

The industrial sector is projected to grow by an annual average of 1.4% over the next five years. Brexit uncertainties are also likely to adversely impact industrial output over the next couple of years. However, like the commercial market, expansion is expected post 2018.

An average yearly fall of 1.3% is projected for the private housing sector. During this heightened period of uncertainty consumer confidence is likely to suffer. This together with a slowdown in earnings and a weakening labour market does not bode well for the sector. By 2021 private housing output is predicted to be around 94% of its 2016 peak.

In 2015 the North East accounted for around 4% of UK construction employment. Over the next five years construction employment in the region is likely to fall by 0.6% per year on average in the region, the second weakest rate compared with other regions and devolved nations and below the UK's average yearly growth rate of 0.6%. However, not all occupational categories are predicted to see declines, with the managerial/ supervisory and professional ones faring better than the trades.

At 1,270 extra recruits required per year over the forecast period, the region's ARR is 1.3% of base 2017 employment, similar to the UK rate of 1.4%. Significant net outflows of the construction workforce in the region keeps the ARR ratio close to the UK one despite the difference in employment growth rates. There are five occupational categories that have an ARR between 2.6% and 5%.

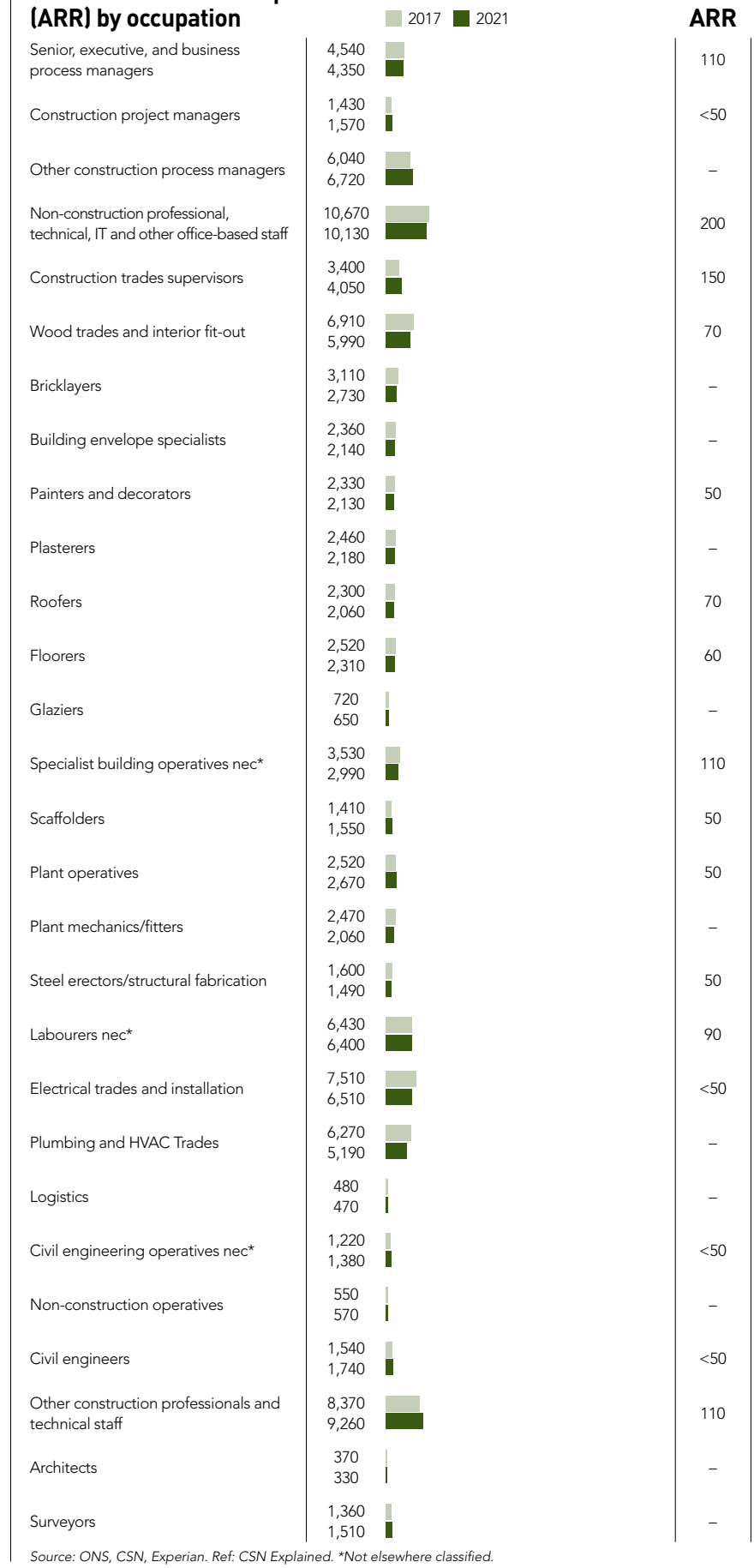
CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	North East
Public housing	4%	4%
Private housing	18%	23%
Infrastructure	15%	21%
Public non-housing	7%	9%
Industrial	3%	5%
Commercial	18%	14%
Housing R&M	18%	11%
Non-housing R&M	17%	13%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – NORTH EAST

Annual recruitment requirement (ARR) by occupation



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

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%.

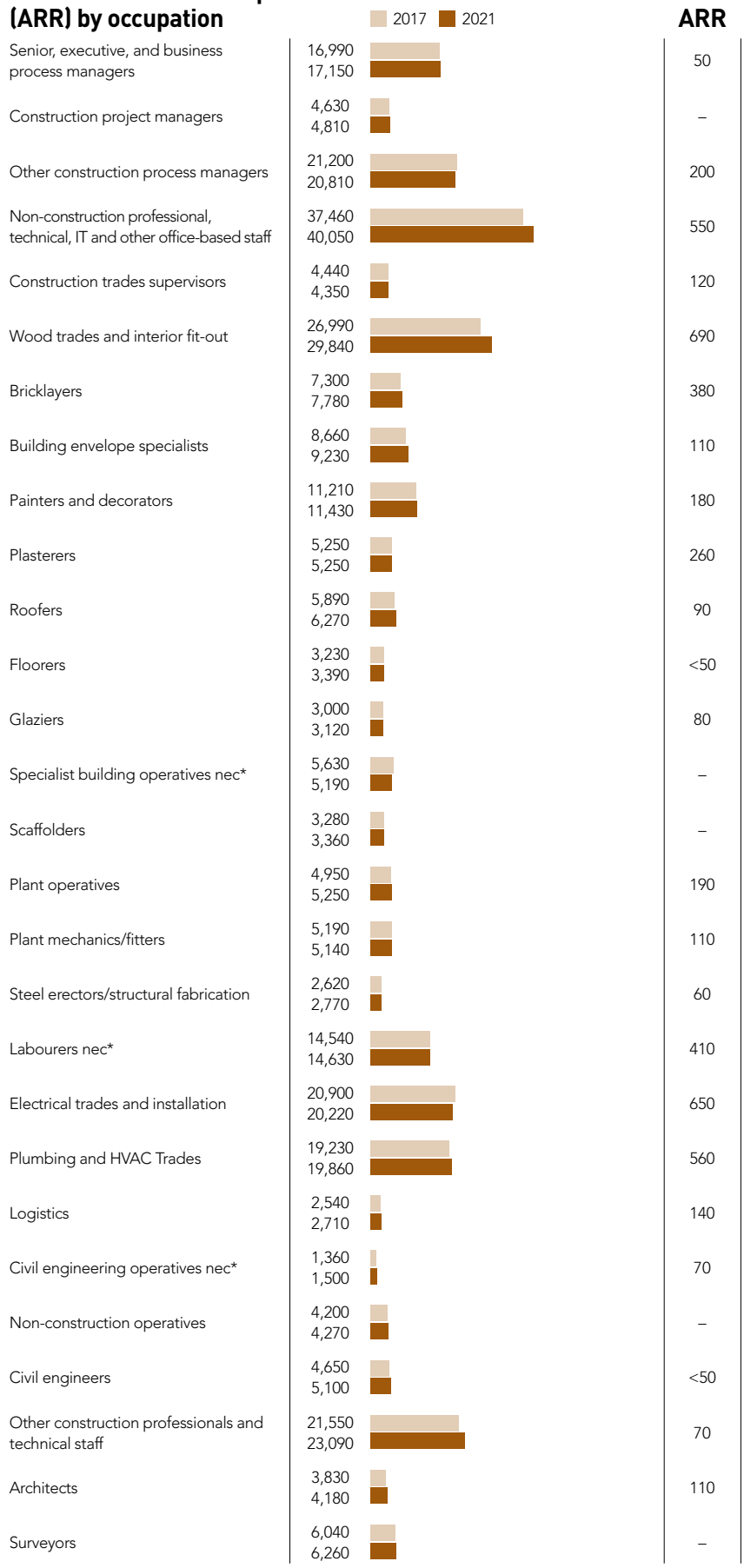
CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	North West
Public housing	4%	3%
Private housing	18%	21%
Infrastructure	15%	13%
Public non-housing	7%	9%
Industrial	3%	5%
Commercial	18%	15%
Housing R&M	18%	15%
Non-housing R&M	17%	19%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – NORTH WEST

Annual recruitment requirement (ARR) by occupation



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

YORKSHIRE AND HUMBER

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

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

1.5%

Yorkshire and Humber has an ARR of

1,860

KEY FINDINGS

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

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

In the 2017–2021 period construction output in Yorkshire and Humber is predicted to grow at an annual average rate of 0.5%, against a 0.3% a year contraction in the short term. Output growth in the commercial sector is expected to drive the gains, with some support also coming from the industrial, private housing and public non-housing sectors. Contractions are forecast in the public housing and infrastructure sectors, with the former continuing to underperform the regional average by a wide margin.

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

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

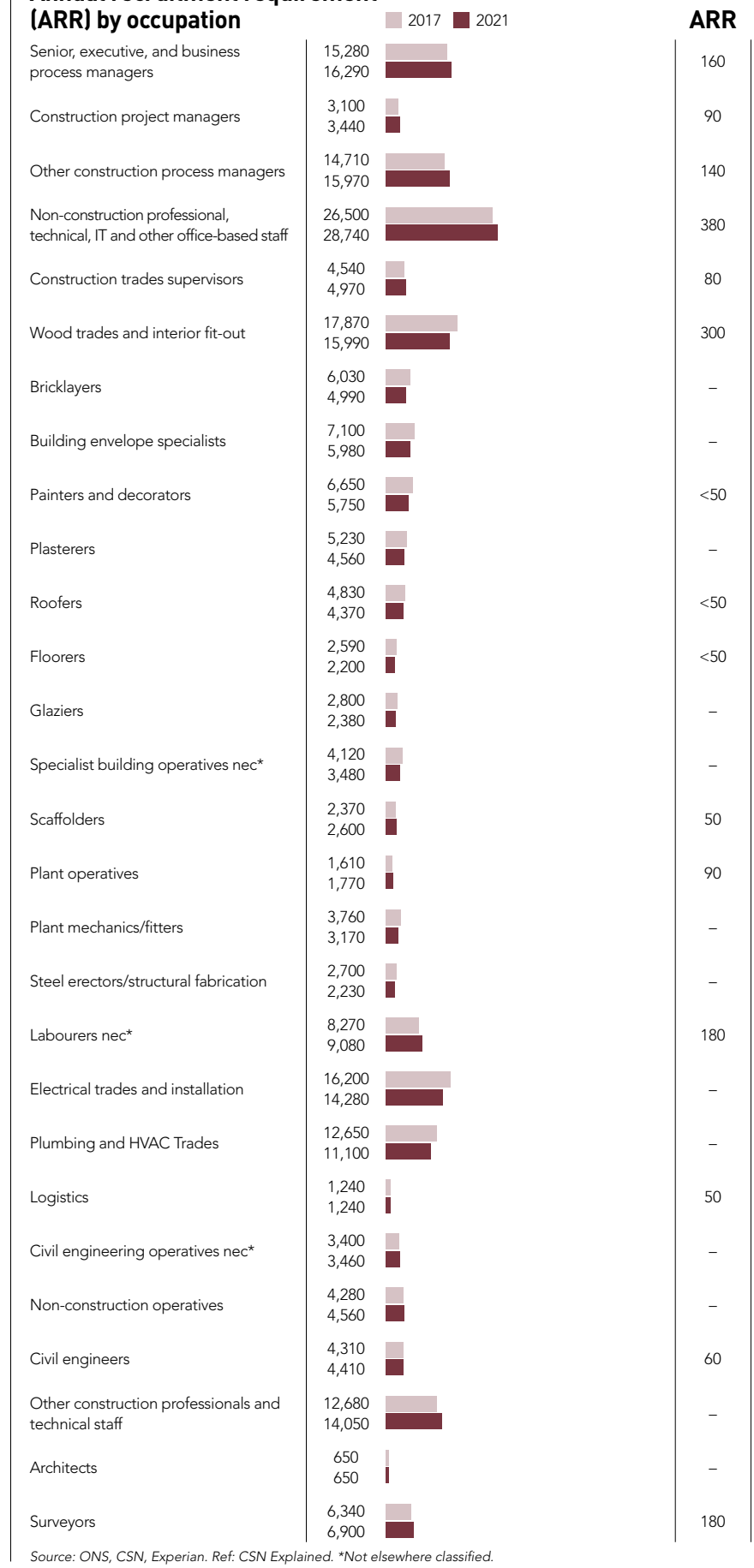
CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	Yorkshire and Humber
Public housing	4%	6%
Private housing	18%	20%
Infrastructure	15%	14%
Public non-housing	7%	6%
Industrial	3%	5%
Commercial	18%	16%
Housing R&M	18%	18%
Non-housing R&M	17%	15%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – YORKSHIRE AND HUMBER

Annual recruitment requirement (ARR) by occupation



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

EAST MIDLANDS

In the East Midlands, construction output is expected to stagnate between 2017 and 2021, with no growth forecast. This compares to last year's projection of 1% for the 2016 to 2020 period, and lags well behind expected growth of 1.7% at the national level. Given this relative weakness in output growth, employment is expected to decline by 0.3% a year in the five years to 2021, compared with growth of 0.6% at the UK level. The East Midlands' annual average recruitment requirement (ARR) is estimated at 1,770. This represents 1% of base 2017 employment.

Growth is expected to focus on both the Public and R&M non-housing sectors in the short term, by

2.1%

each

Employment is forecast to decline by

0.3%

a year on average

The East Midlands has an ARR of

1,770

KEY FINDINGS

Construction output in the East Midlands increased by 7.7% in 2015 to £7.7bn in 2013 prices. This built on growth of 8.4% in 2014, though output remained well down on the pre-recession peak of £10bn in 2005. The infrastructure and industrial sectors drove the increase, with output in the former reaching easily its highest level on record, at £1.3bn. In the first three quarters of 2016 output totalled £7bn in current prices. This represents a 16% increase on the same period of 2015.

Annual output growth in the East Midlands is expected to average 0% in the five years to 2021, compared to 1.7% at the national level. Infrastructure and non-housing R&M are the only sectors expected to register any meaningful growth, with the former forecast to grow at an annual average rate of 0.8%. The government's £1.8bn Midlands road building project should continue to support output gains in the sector.

The private housing and public non-housing sectors are predicted to grow at just fractionally above zero percent a year. Given a dearth of confirmed projects in the pipeline it is difficult to see how any meaningful growth could materialise in either sector.

Annual declines in output are expected in the commercial, industrial and public housing sectors. Following the European Union referendum, weaker than otherwise anticipated global investment is likely to hit the former sectors. The government imposed reductions on housing rents will adversely impact on the latter.

Employment is projected to decline by an average of 0.3% a year between 2017 and 2021, compared to the UK average of 0.6% growth. In numbers' terms this sees employment fall from an estimate of just over 170,000 in 2016 to around 168,000 in 2021. Of the 28 occupational aggregates less than half (11) are set to grow between 2016 and 2021.

The ARR for the East Midlands is projected to be 1,770 for the 2017 to 2021 period. This represents 1% of base 2017 employment, a lower ratio than the UK average of 1.4%. Five occupational categories were flagged as having medium requirements, with all the remaining occupational categories (22)(21) being flagged with low requirements. In absolute terms, most categories had ARRs below 100, with more than half having no appreciable requirement.

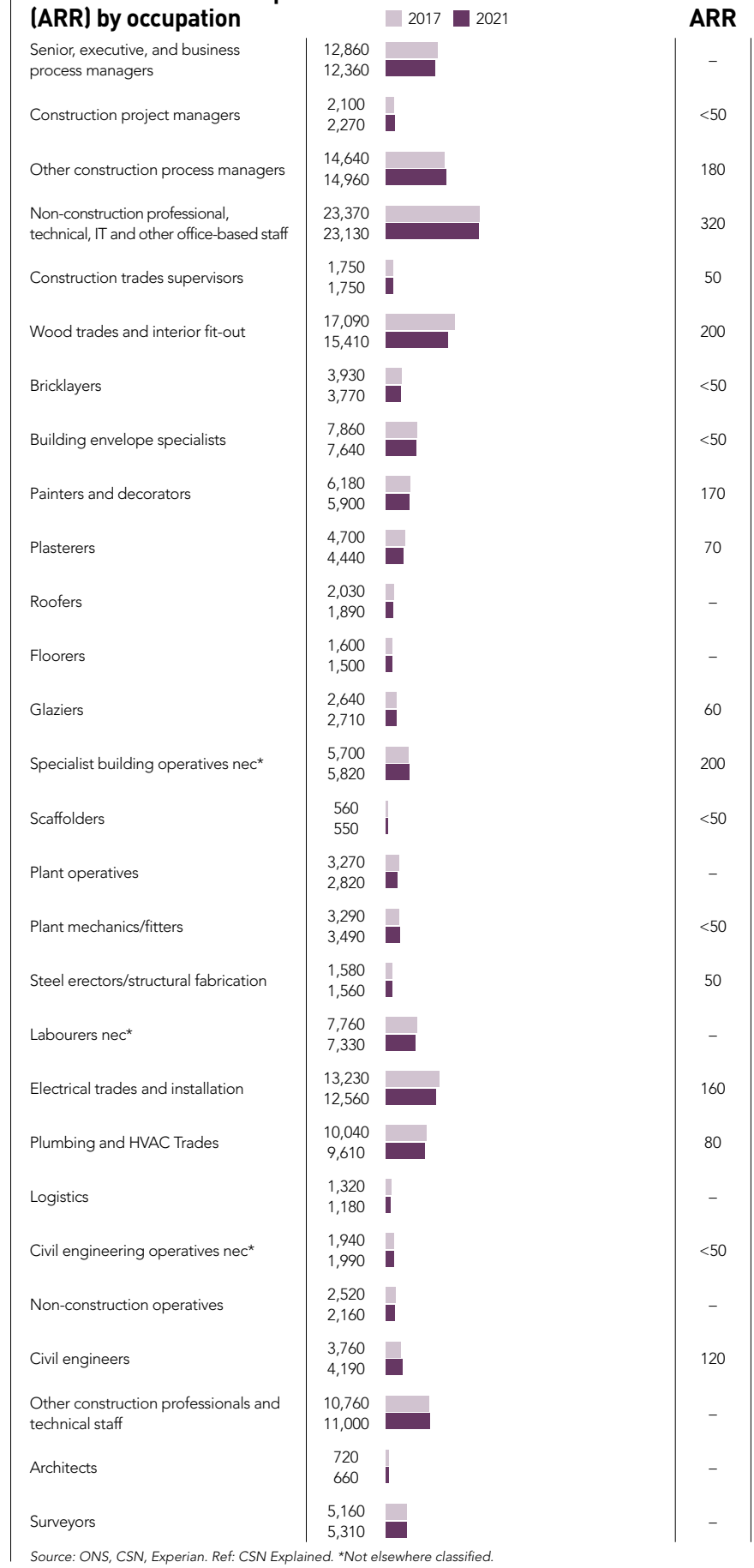
CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	East Midlands
Public housing	4%	2%
Private housing	18%	21%
Infrastructure	15%	17%
Public non-housing	7%	8%
Industrial	3%	8%
Commercial	18%	11%
Housing R&M	18%	16%
Non-housing R&M	17%	17%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – EAST MIDLANDS

Annual recruitment requirement (ARR) by occupation



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

WEST MIDLANDS

Construction output in the West Midlands is forecast to grow at an annual average rate of 1.3% between 2017 and 2021. This represents a downgrade from last year's forecast of a 1.7% annual average gain in the 2016 – 2020 period, and lags behind the expected growth of 1.7% annually at the national level. Employment is expected to grow at an average of 0.4% a year in the five years to 2021, also marginally trailing the UK average of 0.6%. The annual average recruitment requirement (ARR) in the region is estimated at 2,800 in the five years to 2021. This represents 1.3% of base 2017 employment.

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

3.6%

Employment is forecast to grow by

0.4%

a year on average

The West Midlands has an ARR of

2,800

KEY FINDINGS

Total construction output in the West Midlands increased by 3% in 2015. This follows growth of 8% in 2013, and 7% in 2014. Output was the highest it has been since 2008. The increase was driven by growth in output of around 20% in the private housing, infrastructure and commercial sectors. There were contractions in all the other new work sectors and repair and maintenance (R&M) output fell by 5%. In the first three quarters of 2016 construction output in the West Midlands came in at £8.1bn in current prices. This represents a 10% increase compared to the same three quarters of 2015.

Total construction output is expected to grow at an annual average rate of 1.3% in 2017–2021, compared to a 0.1% contraction in the short run (2017–2018). The improvement can be attributed mainly to a substantial uplift to growth in the infrastructure sector, from the commencement of the Birmingham branch of High Speed 2 (HS2). Outturns in the commercial sector are also expected to improve compared to the short term, but in most other sectors the outlook is predicted to worsen.

Employment is projected to grow at an annual average rate of 0.4% a year between 2017 and 2021, compared to 0.6% at the national level. In numbers terms this represents an increase from estimated employment of 205,930 in 2016 to 210,190 in 2021. Of the 28 occupational aggregates 16 are set to see growth, while the other 12 are predicted to contract.

The ARR for the West Midlands is projected to be 2,800 for the 2017 to 2021 period. This represents 1.3% of base 2017 employment, a fractionally lower ratio than the UK's 1.4%. Most occupational categories were flagged as having low requirements (ARRs of up to 2.5% of base 2017 employment). No categories were flagged as having a high requirement (over 5%), and just six were highlighted as having a medium requirement (between 2.6% and 5%).

CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	West Midlands
Public housing	4%	3%
Private housing	18%	17%
Infrastructure	15%	8%
Public non-housing	7%	6%
Industrial	3%	5%
Commercial	18%	21%
Housing R&M	18%	16%
Non-housing R&M	17%	24%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – WEST MIDLANDS

Annual recruitment requirement (ARR) by occupation

Occupation	2017	2021	ARR
Senior, executive, and business process managers	16,990	15,920	–
Construction project managers	2,640	2,860	50
Other construction process managers	18,990	20,610	310
Non-construction professional, technical, IT and other office-based staff	29,020	26,970	–
Construction trades supervisors	4,370	4,570	120
Wood trades and interior fit-out	16,740	17,690	690
Bricklayers	5,300	5,400	80
Building envelope specialists	7,230	7,300	<50
Painters and decorators	7,020	7,180	–
Plasterers	2,270	2,060	–
Roofers	3,540	3,720	–
Floorers	1,600	1,540	–
Glaziers	2,790	2,740	–
Specialist building operatives nec*	3,550	3,560	70
Scaffolders	2,270	2,450	70
Plant operatives	2,040	1,940	–
Plant mechanics/fitters	7,040	6,840	–
Steel erectors/structural fabrication	3,390	3,630	50
Labourers nec*	11,610	12,770	320
Electrical trades and installation	15,940	15,210	230
Plumbing and HVAC Trades	12,890	12,460	–
Logistics	2,780	2,620	<50
Civil engineering operatives nec*	2,120	2,190	50
Non-construction operatives	2,680	2,380	–
Civil engineers	2,770	2,980	70
Other construction professionals and technical staff	13,480	14,940	450
Architects	1,580	1,720	<50
Surveyors	5,770	5,940	160

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

EAST OF ENGLAND

Construction output in the East of England is projected to grow at a modest annual average rate of 1% between 2017 and 2021, noticeably below the UK average of 1.7%. Growth in new work is set to exceed that of repair and maintenance (R&M), with rates of 1.4% and 0.5% respectively. Total construction employment for the region is predicted to grow by 0.3% per annum on average, half the UK rate of 0.6%. The annual recruitment requirement (ARR) of 3,970 for the region represents 1.7% of base 2017 employment, above the UK average of 1.4%.

Output is expected to focus on the Infrastructure sector in the short term, averaging

7.2%

per year

Construction Employment is forecast to grow by

0.3%

a year on average

The East has an ARR of

3,970

KEY FINDINGS

Total construction output for the East of England is estimated to have increased by 10% year-on-year in 2015, to a record total of £13.69bn (2013 prices). Overall growth is expected to slow to an average of 1% per annum between 2017 and 2021, below the UK average of 1.7% over the same period.

The infrastructure and commercial sectors are set to be the main driving forces behind growth to 2021. The former will benefit from a range of large scale transport and energy projects, such as the A14 upgrade between Cambridge and Huntingdon and the renewable energy park in Fengate, Peterborough. Growth in the commercial sector looks set to peak in the near term, before levelling out in the mid-term, with investment in new retail centres expected to ease towards the end of the forecast period. Longer-term growth prospects should be bolstered as a new business park in Rochford is developed between 2017 and 2027 and planned improvements to Luton airport commence in 2018.

In contrast, public housing, public non-housing and industrial sector output are mostly set to decrease over the five years to 2021, at respective average rates of 2.8%, 0.9% and 1% per annum on average with two of the largest public construction projects currently planned in the region not due for completion until after 2030.

The private housing sector is set to stabilise in the long run, after a slight decline in 2019, averaging 0.3% annual growth over the forecasting period. Two of the biggest commercial and housing projects in Cambridgeshire and Thurrock are not due for completion until 2020 and 2025 respectively, suggesting more promising growth prospects for both the commercial and private housing sectors beyond 2021.

Construction employment in the East of England is forecast to grow by 0.3% annually in the 2017 to 2021 period, below the UK average of 0.6%. Of the 28 occupational aggregates 16 are predicted to expand over the forecast period. Construction trade supervisors (3.3%), scaffolders (2.7%), plant operatives (2.6%), and architects (2.2%) are set for the strongest growth. In contrast, floorers, glaziers, plumbing and HVAC Trades, and Wood trades and interior fit-out are expected to contract over the same period.

The region's projected annual recruitment requirement for 2017-2021 is 3,970, representing 1.7% of base 2017 employment, above the UK average (1.4%). Of the 28 occupational aggregates, electrical trades and installation is still the category with the highest absolute requirement (510), but as a percentage of base 2017 employment the largest requirement is for logistics personnel (7%).

CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	East of England
Public housing	4%	3%
Private housing	18%	13%
Infrastructure	15%	15%
Public non-housing	7%	5%
Industrial	3%	2%
Commercial	18%	15%
Housing R&M	18%	24%
Non-housing R&M	17%	23%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – EAST OF ENGLAND

Annual recruitment requirement (ARR) by occupation

	2017	2021	ARR
Senior, executive, and business process managers	13,970	13,840	190
Construction project managers	4,420	4,820	130
Other construction process managers	15,340	16,790	200
Non-construction professional, technical, IT and other office-based staff	33,890	35,760	–
Construction trades supervisors	4,710	5,370	130
Wood trades and interior fit-out	26,300	23,580	330
Bricklayers	7,990	7,640	270
Building envelope specialists	10,560	9,660	–
Painters and decorators	9,650	9,740	340
Plasterers	5,410	5,350	<50
Roofers	4,070	3,780	170
Floorers	4,060	3,600	–
Glaziers	2,860	2,550	<50
Specialist building operatives nec*	4,330	4,140	110
Scaffolders	2,480	2,710	130
Plant operatives	2,910	3,210	120
Plant mechanics/fitters	2,700	2,600	70
Steel erectors/structural fabrication	2,250	2,070	–
Labourers nec*	11,380	11,720	170
Electrical trades and installation	16,850	16,650	510
Plumbing and HVAC Trades	16,710	15,070	<50
Logistics	2,910	3,100	200
Civil engineering operatives nec*	960	960	–
Non-construction operatives	1,780	1,810	–
Civil engineers	6,150	6,540	220
Other construction professionals and technical staff	13,890	15,020	350
Architects	4,430	4,890	110
Surveyors	4,600	4,700	140

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

GREATER LONDON

The capital's total construction output is forecast to rise by annual average of 2.4% over the next five years. New work is expected to fare better than repair and maintenance (R&M), with annual average growth of 2.9% in the former compared with 1.2% in the latter. Construction employment is anticipated to increase by an average yearly rate of 1.3%, whilst at 0.9% of base 2017 employment, Greater London has one of the lowest annual recruitment requirements (ARR) relative to the size of its construction market.

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

16%

each

Employment is forecast to grow by

1.3%

a year on average

Greater London has an ARR of

3,870

KEY FINDINGS

Greater London is projected to see annual average growth of 2.4% in total construction output between 2017 and 2021, above the UK average of 1.7%.

Over the short and long run the infrastructure sector is likely to see the highest average yearly increases. There is a number of large schemes that will be taking place over the forecast period such as the £1bn Northern Line Extension scheme, the Thames Tideway Tunnel and High Speed 2 (HS2), keeping output growth buoyant.

With an annual average rise of 5.1% in the five years to 2021, the private housing market is predicted to be the second best performing one. One of the biggest schemes taking place is the Brent Cross and Cricklewood regeneration development, which is expected to contain a large residential element.

Greater London's commercial sector is predicted to stagnate in output terms over the next five years. Due to its heavy reliance on overseas investors in the London market, this sector is believed to be the most vulnerable to the impact of the referendum vote and it is likely that the biggest impact will be on the offices sub-sector. By contrast, between 2017 and 2021 the UK is expected to see average yearly expansion of 1.2% over the next five years. One of the reasons for this is that outside London the regional offices market tends to be more insulated from global events.

The public housing sector is expected to see average yearly growth of 2.4% over the five years to 2021. The majority of this expansion is likely to come in the next two years as work on University College London's (UCL) new campus begins.

In 2015, the capital accounted for around 15.6% of UK construction employment and this is likely to increase to 16.3% by 2021. Over the next five years construction employment is likely to rise by 1.3% per year on average in Greater London, one of the highest rates compared with other regions and devolved nations and above the UK rate of 0.6%.

At 3,870 extra recruits required per year over the forecast period, the region's ARR is just 0.9% of base 2017 employment, lower than the UK rate of 1.4%. Due to the strong inflow of construction workers that London benefits from, there are only four occupational categories that have an ARR between 2.5% and 5% of base 2017 employment, namely the construction trade supervisors, plant operatives, logistics and civil engineering trades.

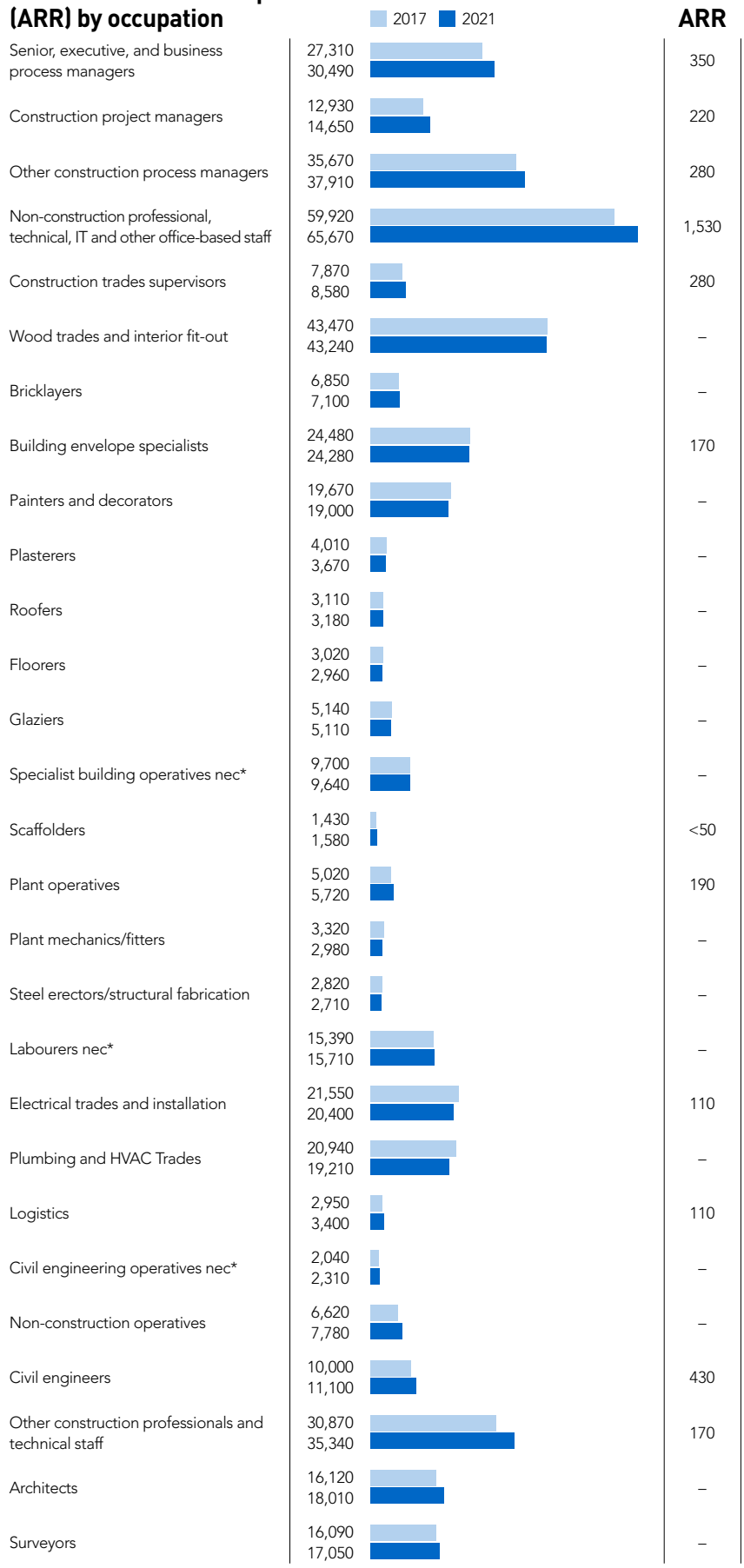
CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	Greater London
Public housing	4%	5%
Private housing	18%	21%
Infrastructure	15%	8%
Public non-housing	7%	5%
Industrial	3%	1%
Commercial	18%	29%
Housing R&M	18%	16%
Non-housing R&M	17%	15%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – GREATER LONDON

Annual recruitment requirement (ARR) by occupation



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

SOUTH EAST

The region's total construction output is forecast to rise by an annual average of 2.2% over the next five years, above the UK average of 1.7%. The South East's construction employment is anticipated to increase by an average yearly rate of 1.3%, around double the UK rate (0.6%), but at 1% of base 2017 employment, the region's annual recruitment requirement (ARR) is below the UK rate of 1.4%.

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

6.5%

Employment is forecast to grow by

1.3%

a year on average

The South East has an ARR of

3,940

KEY FINDINGS

The region's total construction output is projected to see average yearly increases of 2.2% over the next five years, above the UK average of 1.7%.

The infrastructure sector is expected to see the greatest annual average expansion of 6.3% between 2017 and 2021. There are numerous schemes that are likely to be taking place such as £104m worth of work on the M20's new junction 10a and link road to the A2070. The double digit output growth that is predicted for 2019 is mainly driven by work on the High Speed 2 project.

In the five years to 2021 the commercial market is likely to experience annual average expansion of 4.1%. Output growth is anticipated to be the strongest over the near term as work on the £2bn Paramount theme park begins. However, there is a downside risk that any further delays to this project could lead to smaller expansion in the region's commercial construction output over the forecast period.

The private housing sector is projected to grow by an annual average of 2.1% over the next five years due to various projects that are either taking place or about to start, the biggest of which is for 10,000 new homes in Horsham. By the end of the forecast period output is likely to have reached a new high of £3.78bn.

The public non-housing sector is projected to stagnate between 2017 and 2021. There is a number of developments in the pipeline such as tourism and visitor information buildings in Devonshire Park, Eastbourne and a new sports and leisure facility at Broadbridge Heath in Horsham. However, these projects are of a small scale and will therefore have a minimal impact on overall output levels.

In 2015, the South East accounted for around 15% of UK construction employment. Over the next five years construction employment in the region is projected to rise by 1.3% per year on average, one of the strongest growth rates compared with other regions and devolved nations and above the UK's average yearly growth rate of 0.6%. As is the case across the UK as a whole, the strongest growth will tend to be in the managerial/supervisory and professional occupations rather than the trades.

At 3,940 extra recruits required per year over the forecast period, the region's ARR is 1% of base 2017 employment, below the UK rate of 1.4%. There are six occupational categories that have an ARR between 2.5% and 5% of base 2017 employment, namely construction project managers, plant operatives, steel erectors/structural fabrication, logistics, civil engineering operatives nec., and architects.

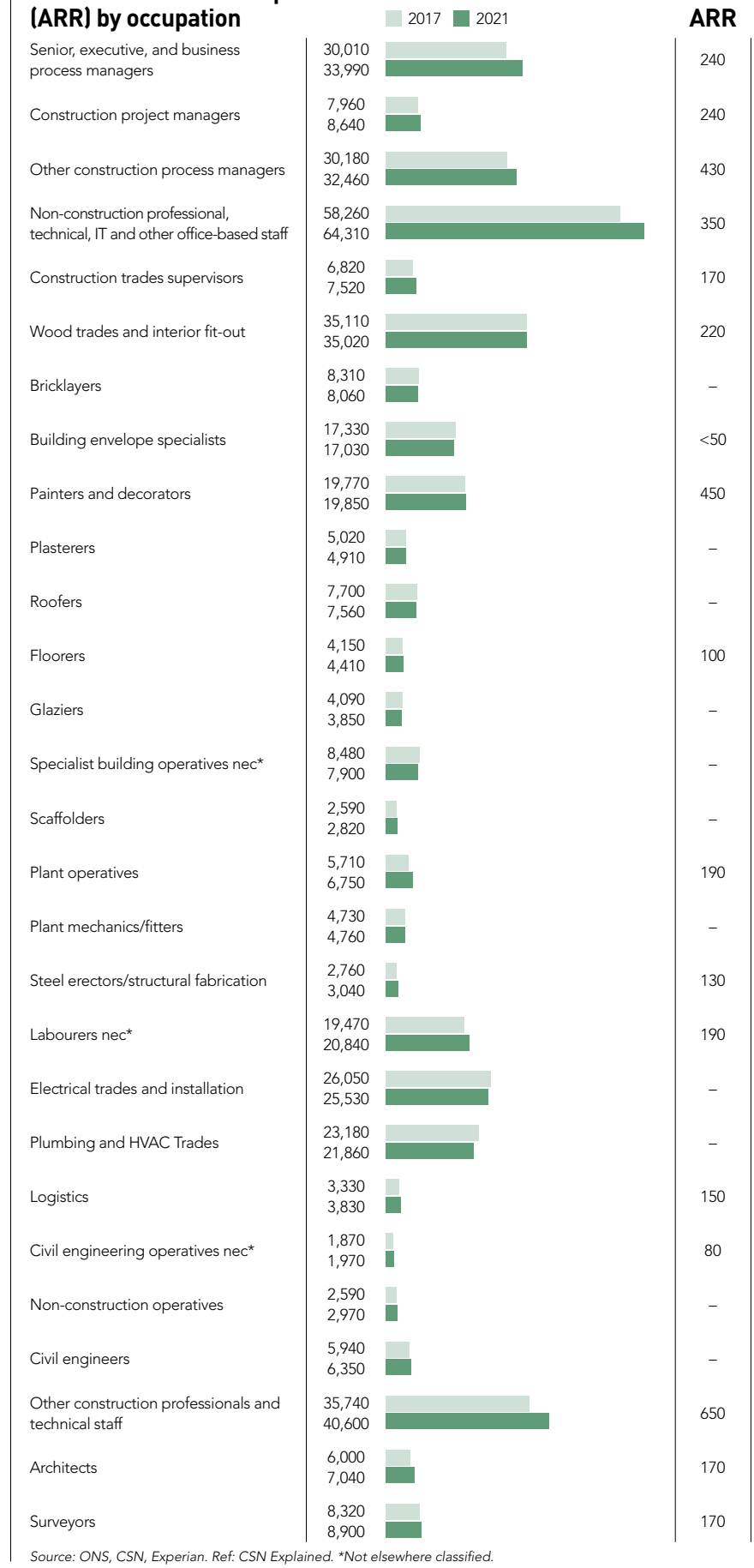
CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	South East
Public housing	4%	2%
Private housing	18%	17%
Infrastructure	15%	13%
Public non-housing	7%	7%
Industrial	3%	3%
Commercial	18%	14%
Housing R&M	18%	26%
Non-housing R&M	17%	18%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – SOUTH EAST

Annual recruitment requirement (ARR) by occupation



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

SOUTH WEST

Construction output in the South West is projected to grow at an annual average rate of 3.1% in the five years to 2021, the second fastest rate after Wales. Both the region and the devolved nation will benefit from new nuclear build over the 2017 to 2021 period. On this output prognosis annual average employment growth is predicted to be 0.7%, slightly higher than the UK rate of 0.6%. The South West annual recruitment requirement (ARR), at 4,180, is the second highest in absolute terms, and represents 1.8% of base projected 2017 employment, higher than the UK ratio of 1.4%.

KEY FINDINGS

The South West did not see the big contraction in construction output that some other regions and devolved nations did during the 'great recession' and its aftermath. However, that has meant that recent growth has been sluggish and in fact output in real terms is estimated to have declined by 2% in 2015. The sector is likely to have returned to modest growth last year, of around 1%, with housing and repair and maintenance being the main drivers of expansion.

Growth is projected to accelerate to over 3% a year on average in the five years to 2021, by which year output should reach around £11.6bn (2013 prices), close to its previous peak in 2004. The primary driver of this expansion will be the infrastructure sector, with annual average growth of 17%, as the result of the resumption of enabling works and the start of main construction on the Hinkley Point C new nuclear power station, which finally received the go-ahead from government in the second half of last year. If the infrastructure sector were to be excluded, then annual average growth across the remaining sectors would be a much more modest 0.9%.

The other main area of output growth is likely to be housing, both public and private, which is proportionally more important in the South West than the UK as a whole. Once work related to the Army Basing Plan completes there are few projects of any size in the public non-housing pipeline, and both the industrial and commercial sectors will be impacted adversely by falls in business investment this year and next. The housing repair and maintenance sector is likely to be affected by economic uncertainty and more constrained disposable income growth, at least in the short term, as consumers delay expenditure on 'big ticket' items a little.

Employment growth is predicted to average 0.7% a year over the 2017 to 2021 period, a little higher than the UK rate of 0.6%. Infrastructure activity tends to be less labour intensive than that in other sectors and thus has less of an impact on employment numbers compared with output ones. Construction employment in the South West will reach just under 235,000 on these forecasts, a 4% increase on the outturn for 2015, but still 5% below its 2008 peak. The main trades are generally expected to see the strongest growth, in contrast to the UK as a whole, where the managerial/supervisory and professional occupations are forecast to fare best.

The South West's ARR, at 4,180, represents 1.8% of base projected 2017 employment, a higher ratio than the UK's (1.4%). The South West tends to see significant net outflows of its workforce to the South East and also suffers from a slightly older population, leading to one of the highest ARRs in absolute and relative terms. One occupational category shows up red on the traffic light system, indicating an ARR ratio of over 5% relative to base employment, and that is plasterers, with a further seven with a medium requirement of between 2.6% and 5% of base employment.

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

34.9%

Employment is forecast to grow by

0.7%

The South West has an ARR of

4,180

CONSTRUCTION INDUSTRY STRUCTURE 2016

	UK	South West
Public housing	4%	2%
Private housing	18%	23%
Infrastructure	15%	13%
Public non-housing	7%	6%
Industrial	3%	2%
Commercial	18%	14%
Housing R&M	18%	23%
Non-housing R&M	17%	17%

Source: ONS, Experian

TOTAL EMPLOYMENT BY OCCUPATION – SOUTH WEST

Annual recruitment requirement (ARR) by occupation

	2017	2021	ARR
Senior, executive, and business process managers	14,390	13,560	380
Construction project managers	2,670	2,810	60
Other construction process managers	11,770	12,190	190
Non-construction professional, technical, IT and other office-based staff	31,260	32,130	1,080
Construction trades supervisors	3,320	3,470	50
Wood trades and interior fit-out	28,810	31,340	370
Bricklayers	7,900	8,400	250
Building envelope specialists	12,280	12,520	70
Painters and decorators	11,280	11,740	240
Plasterers	5,080	5,130	270
Roofers	4,610	4,730	230
Floorers	1,300	1,310	<50
Glaziers	2,850	3,010	130
Specialist building operatives nec*	4,160	4,450	<50
Scaffolders	3,650	3,280	<50
Plant operatives	3,920	4,100	–
Plant mechanics/fitters	2,190	2,060	<50
Steel erectors/structural fabrication	2,470	2,560	<50
Labourers nec*	8,120	6,830	–
Electrical trades and installation	16,090	16,040	240
Plumbing and HVAC Trades	19,310	20,800	210
Logistics	940	970	<50
Civil engineering operatives nec*	2,420	2,510	–
Non-construction operatives	1,750	1,590	–
Civil engineers	2,680	2,730	<50
Other construction professionals and technical staff	14,960	14,750	<50
Architects	2,840	2,990	–
Surveyors	6,610	6,930	250

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

CSN EXPLAINED

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

CSN METHODOLOGY gives an overview of the underpinning methods that are used by the CSN, working in partnership with Experian, to produce the suite of reports at a UK, national and regional level.

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

NOTES has some further information relating to the data sources used for the various charts and tables. This section also outlines what is meant by the term 'footprint', when talking about the areas of responsibility.

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

OCCUPATIONAL GROUPS gives a detailed breakdown of the 28 occupational groups into the individual standard occupational classification (SOC) codes that are aggregated to provide the employment and recruitment requirement.

CSN METHODOLOGY

BACKGROUND

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

The CSN functions at both a national and regional level. It comprises a National Group, 12 Observatory groups, a forecasting model for each of the regions and countries, and a Technical Reference Group. An Observatory group currently operates in each of the nine English regions and also in Wales, Scotland and Northern Ireland.

Observatory groups currently meet twice a year and consist of key regional stakeholders invited from industry, Government, education and sector bodies, all of whom contribute their local industry knowledge and views on training, skills, recruitment, qualifications and policy. The National Group also includes the same range of representatives and meets twice per year to set the national scheme, forming a backdrop for the Observatories.

At the heart of the CSN are several models that generate forecasts of employment requirements within the industry for a range of occupational groups. The models are designed and managed by Experian under the independent guidance and validation of the Technical Reference Group, which is comprised of statisticians and modelling experts.

The models have evolved over time and will continue to do so, to ensure that they account for new research as it is published, as well as new and improved modelling techniques.

Future changes to the model will only be made after consultation with the Technical Reference Group.

THE MODEL APPROACH

The model approach relies on a combination of primary research and views from the CSN to facilitate it. National data is used as the basis for the assumptions that augment the models, which are then adjusted with the assistance of the Observatories and National Group. Each English region, Wales, Scotland and Northern Ireland has a separate model (although all models are interrelated due to labour movements) and, in addition, there is one national model that acts as a constraint to the individual models and enables best use to be made of the most robust data (which is available at the national level).

The models work by forecasting demand and supply of skilled workers separately. The difference between demand and supply forms the employment requirement. The forecast total employment levels are derived from expectations about construction output and productivity. Essentially, this is based upon the question 'How many people will be needed to produce forecast output, given the assumptions made about productivity?'.

The annual recruitment requirement (ARR) is a gross requirement that takes into account workforce flows into and out of construction, due to such factors as movements between industries, migration, sickness and retirement. However, these flows do not include movements into the industry from training, although robust data on training provision is being developed by CITB in partnership with public funding agencies, further education, higher

education and employer representatives. The ARR provides an indication of the number of new employees that would need to be recruited into construction each year in order to realise forecast output.

Estimates of demand are based on the results of discussion groups comprising industry experts, a view of construction output and integrated models relating to wider national and regional economic performance. The models are dynamic and reflect the general UK economic climate at any point in time. To generate the labour demand, the models use a set of specific statistics for each major type of work to determine the employment, by trade, needed to produce the predicted levels of construction output. The labour supply for each type of trade or profession is based upon the previous year's supply (the total stock of employment) combined with flows into and out of the labour market.

The key leakages (outflows) that need to be considered are:

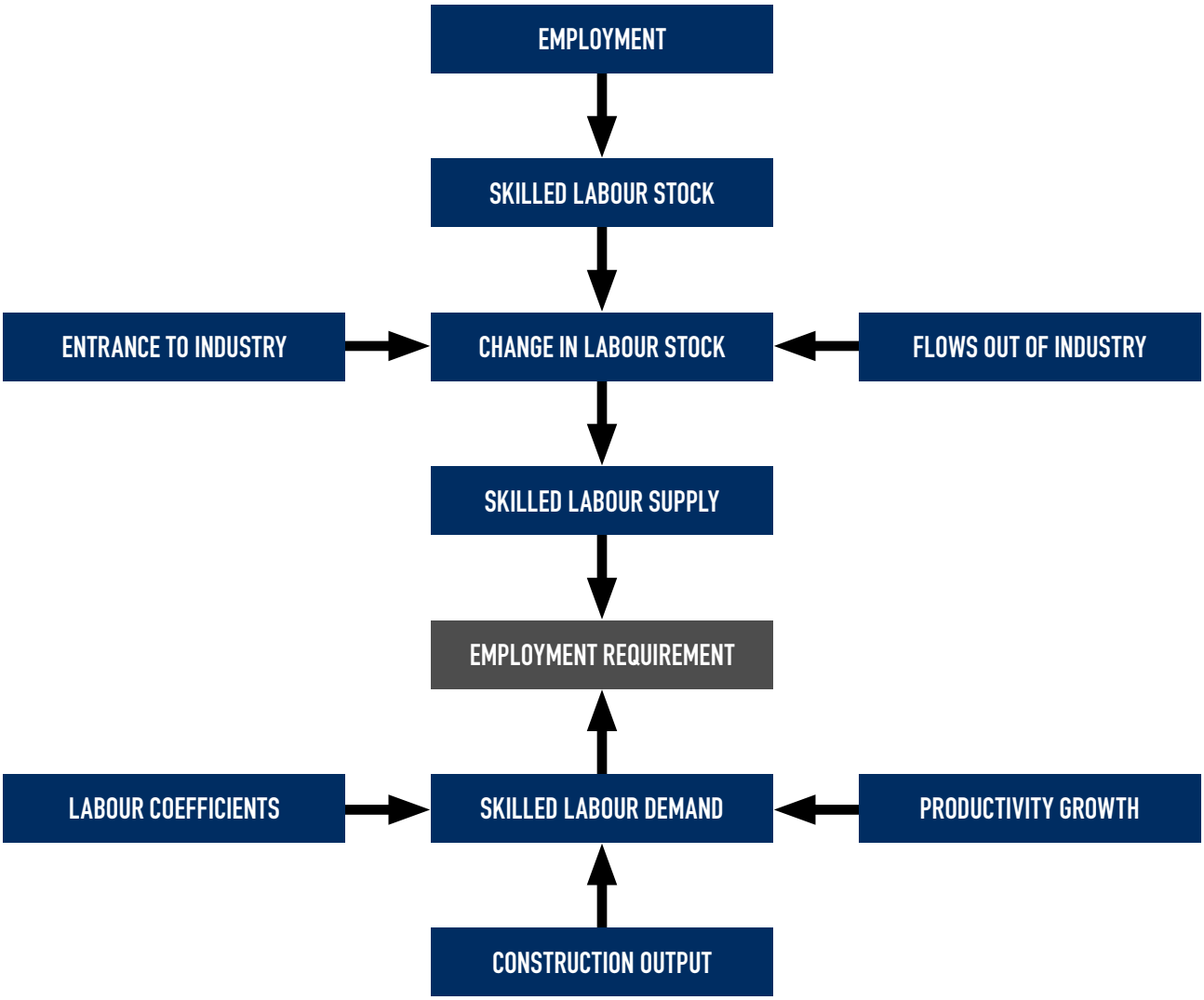
- Transfers to other industries
- International/domestic out migration
- Permanent retirements (including permanent sickness)
- Outflow to temporary sickness and home duties.

The main reason for outflow is likely to be transfer to other industries.

Flows into the labour market include:

- Transfers from other industries
- International/domestic immigration
- Inflow from temporary sickness and home duties.

The most significant inflow is likely to be from other industries. A summary of the model is shown in the flow chart.



GLOSSARY OF TERMS

Building envelope specialists – any trade involved with the external cladding of a building other than bricklaying, e.g. curtain walling.

Demand – this is calculated using construction output data from the Office for National Statistics (ONS) and the Department of Finance and Personnel Northern Ireland (DFP), along with vacancy data from the National Employer Skills Survey, produced by the Department for Education and Skills. These data sets are translated into labour requirements by trade using a series of coefficients to produce figures for labour demand that relate to forecast output levels.

GDP (gross domestic product) – total market value of all final goods and services produced. A measure of national income. GDP = GVA plus taxes on products minus subsidies on products.

GVA (gross value added) – total output minus the value of inputs used in the production process. GVA measures the contribution of the economy as a difference between gross output and intermediate outputs.

Coefficients – to generate the labour demand, the model makes use of a set of specific statistics for each major type of work, to determine employment by trade or profession, based upon the previous year's supply. In essence, this is the number of workers of each occupation or trade needed to produce £1m of output across each sub-sector.

LFS (Labour Force Survey) – a UK household sample survey that collects information on employment, unemployment, flows between sectors and training. Information is collected from around 53,000 households each quarter (the sample totals more than 100,000 people).

LMI (labour market intelligence) – data that is quantitative (numerical) or qualitative (insights and perceptions) on workers, employers, wages, conditions of work, etc.

Macroeconomics – the study of an economy at a national level, including total employment, investment, imports, exports, production and consumption.

Nec – not elsewhere classified, used as a reference in LFS data.

ONS (Office for National Statistics) – organisation producing official statistics on the economy, population and society at both a national and local level.

Output – total value of all goods and services produced in an economy.

Productivity – output per employee. SIC codes (Standard Industrial Classification codes) – from the United Kingdom Standard Industrial Classification of Economic Activities produced by the ONS.

SOC codes (Standard Occupational Classification codes) – from the United Kingdom Standard Occupational Classification produced by the ONS.

Supply – the total stock of employment in a period of time, plus the flows into and out of the labour market. Supply is usually calculated from LFS data.

NOTES

NOTES

1 Except for Northern Ireland, output data for the English regions, Scotland and Wales is supplied by the Office for National Statistics (ONS) on a current price basis. Thus, national deflators produced by the ONS have been used to deflate prices to a 2005 constant price basis, so that the effects of inflation have been stripped out.

2 The annual average growth rate of output is a compound average growth rate, i.e. the rate at which output would grow each year if it increased steadily over the forecast period.

3 Only selected components of gross value added (GVA) are shown in this table and so do not sum to the total.

4 For new construction orders, comparison is made with Great Britain rather than the UK, owing to the fact that there are no orders data series for Northern Ireland.

5 Employment numbers are rounded to the nearest 10.

6 The tables include data relating to plumbers and electricians. As part of SIC 43, plumbers and electricians working in contracting are an integral part of the construction process.

7 A reporting minimum of 50 is used for the annual recruitment requirement (ARR). As a result, some region and devolved nation ARR forecasts do not sum to the total UK requirement.

8 The Employment and ARR tables show separate totals for SIC 41–43 and SIC 41–43, 71.1 and 74.9. The total for SIC 41–43 covers the first 24 occupational groups on the relevant tables and excludes civil engineers, other construction professionals and technical staff, architects and surveyors. The total for SIC 41–43, 71.1 and 74.9 includes all occupations.

FOOTPRINTS FOR BUILT ENVIRONMENT SECTOR

CITB and CITB Northern Ireland are responsible for SIC 41 Construction of buildings, SIC 42 Civil engineering, SIC 43 Specialised construction activities and SIC 71.1 Architectural and engineering activities and related technical consultancy.

The table summarises the SIC codes (2007) covered by CITB and CITB Northern Ireland:

CITB and CITB Northern Ireland	
SIC Code	**Description**
41.1	Development of building projects
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]

[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*

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