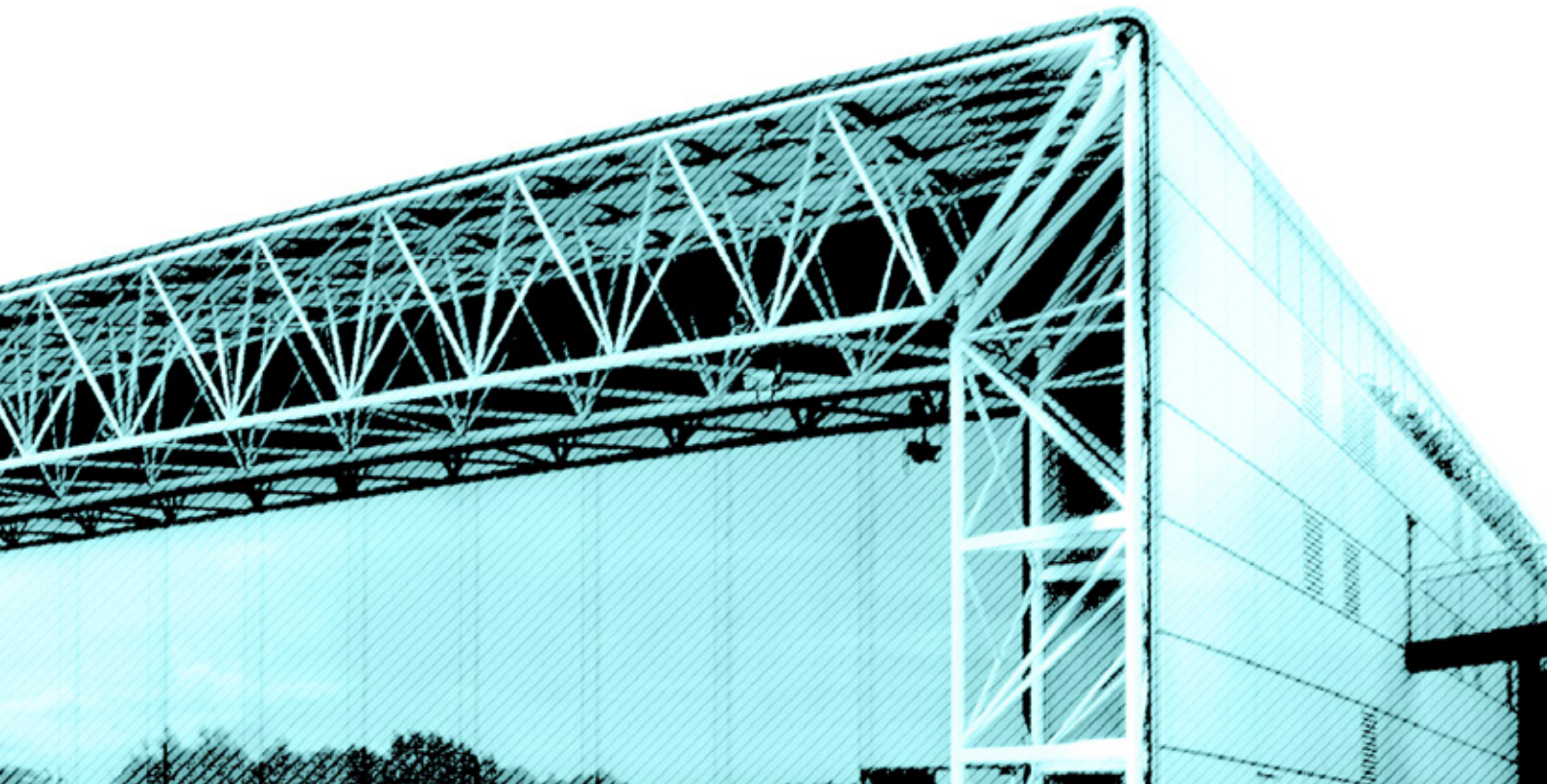




INDUSTRY INSIGHTS

Construction Skills Network
Forecasts 2017–2021



EAST OF ENGLAND

About CITB

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

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

About Experian

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

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SUMMARY – 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

4.1%

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.

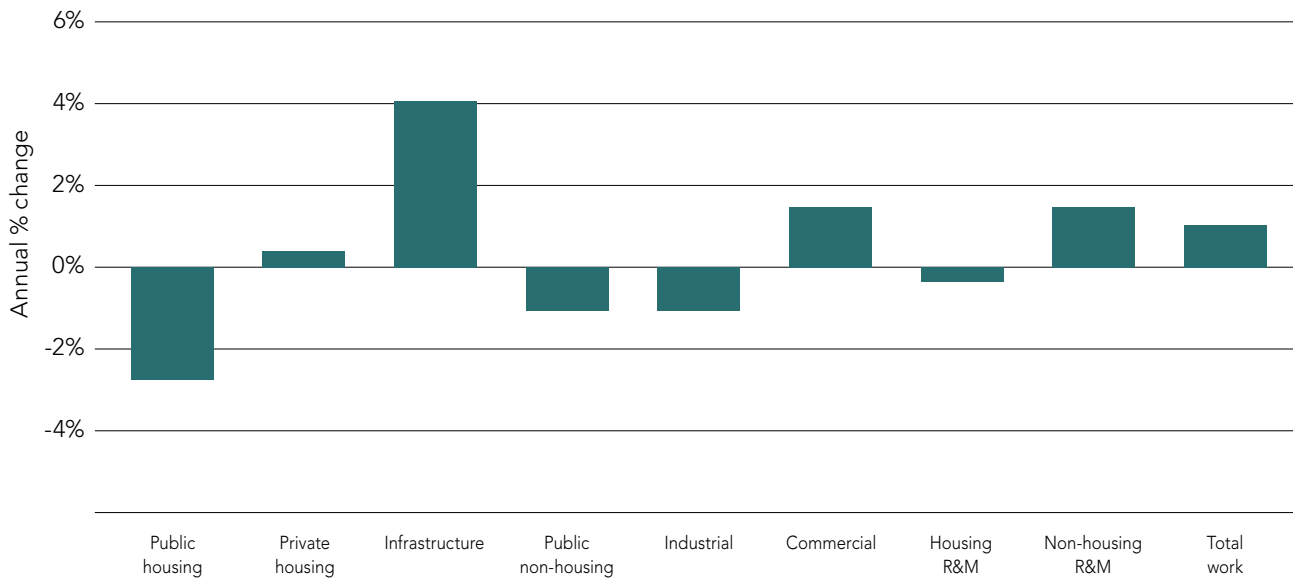
In contrast, public housing, public non-housing and industrial sector output are mostly set to decrease over the five years to 2021, at respective average rates of 2.8%, 0.9% and 1% per annum on average with two of the largest public construction projects currently planned in the region not due for completion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

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017-2021 – EAST OF ENGLAND



Source: CSN, Experian.
Ref: CSN Explained.

REGIONAL COMPARISON 2017-2021

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

Source: CSN, Experian.
Ref: CSN Explained.

Construction output in the East of England will grow fastest in the infrastructure and commercial sectors between 2017 and 2021.

THE OUTLOOK FOR CONSTRUCTION IN THE EAST OF ENGLAND

CONSTRUCTION OUTPUT IN THE EAST OF ENGLAND – OVERVIEW

Construction output increased by 10% year-on-year in 2015, to a record total of £13.69bn in 2013 prices.

The change in output was more evenly spread across sectors in 2015, compared to the previous year. After a significant year-on-year increase in public housing in 2014, the sector saw a 1% fall in 2015 to £349m. Public non-housing continued its contraction at a rate of 16% to £759m, following on from a similar rate in the previous year.

All other sectors grew to varying extents. Infrastructure saw the most significant expansion of 34% to another record of £2.06bn, while the commercial sector increased by 21%, making it the second largest contributor to growth.

The industrial and private housing sectors also grew at rates of 15% and 8% respectively.

INDUSTRY STRUCTURE

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

The repair and maintenance (R&M) sector continues to contribute a significantly bigger proportion of output in the East of England compared with the UK as a whole in 2015, albeit to a less pronounced extent than in the previous year. Total R&M made up 47% of output in the East of England, compared with 36% for the UK, with higher shares for both housing and non-housing R&M at the regional level.

The breakdown for new work sectors showed much the same ratios as the previous year, with the greatest differences remaining in private housing (18% vs 13%) and commercial (18% vs 15%) for the UK and the East of England respectively.

ECONOMIC OVERVIEW

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

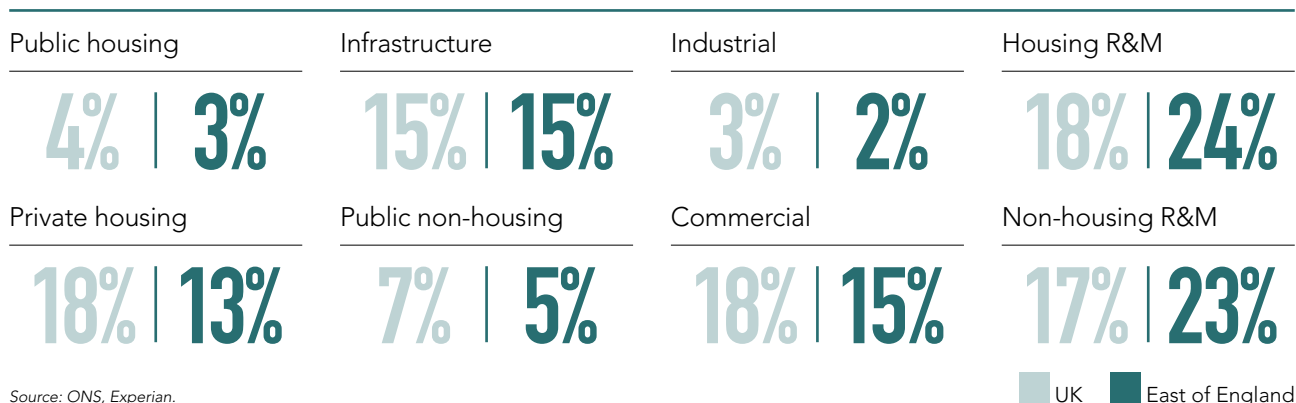
The East of England's gross value added (GVA) totalled £137.9bn in 2012 prices in 2015, following a 2.6% year-on-year increase.

ECONOMIC STRUCTURE

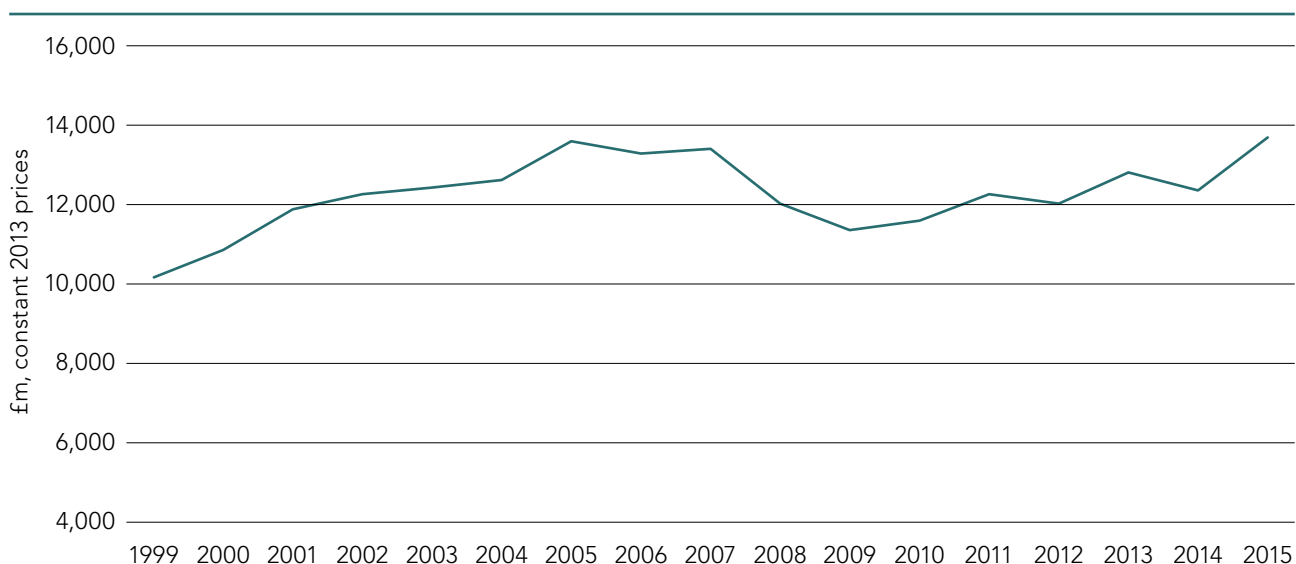
The East of England has a relatively diverse sector base. The region benefits from having a slightly greater than average share of GVA in the robust professional and other private services sector (29% vs 28%), as well as proportionally bigger wholesale and retail and transport and storage ones. Although many of its residents may work in finance and insurance in London, the East of England is only the sixth biggest region for value added in this sector. The energy sector is emerging as a strong player in the region with significant investment in offshore wind-farming while biotechnology has a growing presence around Cambridge. Consumer services benefit from higher than average household incomes while growth in sectors such as retail and accommodation and food services will slow from historic rates; we expect these to perform well in the region compared to the national average in the medium term and beyond.



CONSTRUCTION INDUSTRY STRUCTURE 2015 – UK VS EAST OF ENGLAND



CONSTRUCTION OUTPUT 1999-2015 – EAST OF ENGLAND



ECONOMIC STRUCTURE – EAST OF ENGLAND (£ BILLION, 2012 PRICES)

	Actual	Forecast (Annual % change, real terms)					
	2015	2016	2017	2018	2019	2020	2021
Professional & Other Private Services	40.1	2.8	1.7	1.8	2.2	2.5	2.7
Public Services	23.7	1.0	0.6	1.1	1.8	2.5	2.6
Wholesale & Retail	18.1	4.5	1.4	1.8	2.1	2.4	2.5
Manufacturing	15.5	-0.5	0.2	1.7	1.4	1.3	1.4
Information & Communication	7.3	6.2	2.6	2.6	2.5	2.7	2.6
Total Gross Value Added (GVA)	137.9	1.9	1.1	1.6	1.9	2.3	2.4

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

FORWARD LOOKING ECONOMIC INDICATORS

Annual GVA growth is expected to average 1.9% between 2017 and 2021 in the East of England, slightly higher than the UK rate of 1.8%. Despite weaker growth prospects for the short term, particularly for 2017, long term prospects remain reasonably good.

While manufacturing is expected to grow at a lower rate of 1.2% between 2017 and 2021, public services – as the second largest sub-sector – is expected to grow at an increasing rate over the same period, averaging 1.7%.

Professional and other private services, wholesale and retail and Information and communication should all experience moderate growth at average annual rates of 2.2%, 2% and 2.6% respectively.

Rising inflation is likely to impact on real disposable incomes in the short term. Despite some volatility, particularly in 2018, disposable income is nonetheless estimated to remain positive throughout 2017 to 2021, averaging 1.8% over this period, only slightly down on the 1.9% seen in the five years to 2015.

The LFS unemployment rate is estimated to have fallen again in 2016 to 3.5%. However it is expected to pick up this year and rise to 4.4% by 2020.

Overall, economic forecasts for the UK as a whole are less buoyant than they were a year ago, victim of the increasing global uncertainty in recent months due to a number of factors, not just the EU referendum result, but the outcome of the U.S. election and continuing political instability, particularly in the Middle East.

NEW CONSTRUCTION ORDERS – OVERVIEW

Total construction orders for the East of England picked up significantly in 2015, increasing by 29% to a current price total of £5.6bn, although they were still only 90% of their 2004 peak.

The industrial sector saw its fifth consecutive year of expansion, with growth of 64% in 2015. Private housing saw a second consecutive increase, of 33%.

The infrastructure and commercial sectors both recovered from similar negative trends to post expansion, of 36% and 61% respectively, the latter remaining the largest contributor to overall order numbers.

Public housing and public non-housing both saw sizeable decreases of 21% and 29% respectively.

NEW CONSTRUCTION ORDERS – CURRENT SITUATION

New orders in the East of England in the first three quarters of 2016 totalled £4.37bn (current prices), 1% down on the corresponding period of the previous year. On an annualised basis they were also 1% lower in the third quarter of last year compared with the end of 2015.

The main drag on new orders in the region was the private commercial sector, where they were 29% down three-quarters on three-quarters. In contrast new orders for the public housing sector more than doubled over the same period, and they were up by 65% for the industrial sector.



ECONOMIC INDICATORS – EAST OF ENGLAND (£ BILLION, CURRENT PRICES – UNLESS OTHERWISE STATED)

	Actual	Forecast (Annual % change, real terms)					
	2015	2016	2017	2018	2019	2020	2021
Real household disposable income (2012 prices)	114.6	3.5	3.0	0.4	1.8	1.8	2.3
Household spending (2012 prices)	112.4	3.1	3.0	1.7	1.0	1.6	2.3
Working age population (000s and as % of all)	3,699	61.1%	61.0%	60.9%	61.0%	61.4%	61.3%
House prices (£)	239,667	8.4	1.9	1.6	2.5	3.0	3.2
LFS unemployment (millions)	0.1	-17.7	15.0	5.7	4.7	2.3	0.4

Source: ONS, DCLG, Experian.

NEW CONSTRUCTION ORDERS GROWTH 1999-2015 – EAST OF ENGLAND VS GB



NEW WORK CONSTRUCTION ORDERS – EAST OF ENGLAND (£ MILLION, CURRENT PRICES)

	Actual	Annual % change				
	2015	2011	2012	2013	2014	2015
Public housing	117	-33.6	-35.7	93.2	-34.5	-20.9
Private housing	1,455	-16.7	21.2	-9.3	3.2	33.1
Infrastructure	1,375	20.6	76.6	-19.4	-0.4	35.6
Public non-housing	545	-29.6	30.0	-4.6	-13.9	-28.8
Industrial	435	18.0	15.8	28.8	0.4	64.2
Commercial	1,662	-11.7	15.8	-3.4	-3.5	60.6
Total new work	5,589	-13.2	29.1	-5.6	-4.6	29.4

Source: ONS.
Ref: CSN Explained.

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

Regional Office for National Statistics (ONS) output statistics are published in current prices and are thus inclusive of any inflationary effect. At the time of writing, regional ONS construction output statistics were only available for the first three quarters of 2016.

Construction output was up a modest 1% to £10.95bn (current prices) in the first three quarters of 2016 compared with the same period of 2015. On an annualised basis it was also 1% higher in the third quarter of last year compared with the end of 2015. Strong growth was seen in the private housing (37%) and industrial (59%) sectors, with more modest expansion in the commercial one (4%), but the remaining sectors experienced falls.

Output growth is projected to average 0.7% in 2017 and 2018, with growth centred in the infrastructure sector, with some support from private housing.

On an annual basis, infrastructure output growth is expected to average 7.2% over the short term. This largely derives from a predicted 14% rise in 2017, driven by large transport and energy projects such as the A14 Cambridge to Huntingdon improvement scheme, which started towards the end of 2016 and is worth between £1.2bn and £1.8bn.

Private housing is the only other new work sector that is set to post positive average growth over the short term as a whole, albeit at a modest value of 1.3%, constrained by weaker new orders growth in 2016 and a more uncertain economic environment for prospective house purchasers. Growth is still expected in the short term as the underlying dynamic for the sector – restricted supply and strong latent demand – has not changed despite the EU referendum vote.

Planning permission is being sought for up to 950 homes plus social infrastructure and commercial development on the outskirts of Fakenham in Norfolk. The scheme was originally mooted in 2009. Work is expected to continue to 2019 on Barratt Developments' £345m Trumpington Meadows site on the river Cam in Cambridgeshire. When complete the development will consist of 1,200 new homes, 40% of them affordable.

Despite posting average decreases over the short term, both public sectors should start to recover moving into 2018, with public non-housing output predicted to grow by 4% in 2018, reflecting expectations of increased government support for public projects to help boost the economy in a tough climate. Public housing growth is likely to be hampered at the national and regional level, however, due to the extension of Right to Buy and rent constraints.

There are 39 schools in the East of England that have successfully bid for inclusion in phase 2 of the Priority School Building Programme. The intention is that all schools in phase 2 will have rebuilding or refurbishment work on them completed by 2021, although as yet the timing of individual projects has not been finalised. The outline planning application for Public Health England's new laboratory in Harlow is due to be submitted in mid-2017 after a year of public consultation. The first phase of the £400m scheme is due to be operational by 2024. Phase 1 of the University of Cambridge's ambitious £1bn North West Cambridge development is currently on site and is due to deliver student and staff accommodation as well as social infrastructure and residential units for market sale by spring 2017. Future phases will deliver more student accommodation as well as research and commercial facilities.

Conversely, after posting the strongest growth in 2016, the industrial sector is likely to contract by an average of 5.6% over 2017 and 2018, as a result of weaker domestic demand growth impacting manufacturing profitability. Poor performances in both the manufacturing and transport and storage sectors suggest that general demand for industrial space will not be strong. However, there is likely to be a requirement for bespoke facilities, such as Roxhill Developments Ltd's 750,000 square feet unit for House of Fraser and a 150,000 square feet unit for Kingsley Group on the Gateway Peterborough park, both due for completion in summer 2017.

Despite standing as the largest contributor to total output as of 2015, the commercial sector is predicted to stagnate over the short term, with very little in the way of new work or refurbishment, aside from Intu Developments' planned Charter Place development in Watford.

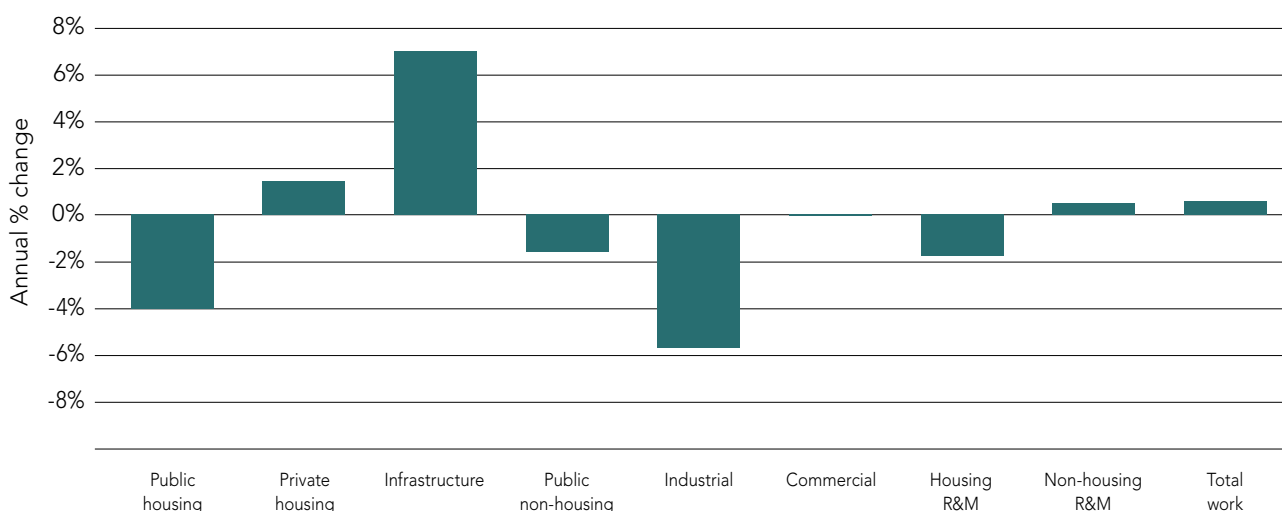


CONSTRUCTION OUTPUT – EAST OF ENGLAND (£ MILLION, 2013 PRICES)

	Actual	Forecast annual % change			Annual average
	2015	2016	2017	2018	2017-2018
Public housing	349	-17%	-8%	0%	-3.9%
Private housing	1,739	21%	1%	2%	1.3%
Infrastructure	2,056	-1%	14%	1%	7.2%
Public non-housing	759	-6%	-6%	4%	-1.4%
Industrial	305	24%	-3%	-8%	-5.6%
Commercial	2,103	-1%	-2%	1%	-0.1%
New work	7,311	4%	3%	1%	1.8%
Housing R&M	3,268	8%	-3%	-1%	-1.7%
Non-housing R&M	3,109	-6%	0%	1%	0.6%
Total R&M	6,377	1%	-1%	0%	-0.6%
Total work	13,688	3%	1%	1%	0.7%

Source: Experian.
Ref: CSN Explained.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017-2018 – EAST OF ENGLAND



Source: Experian.
Ref: CSN Explained.

Construction output in the East of England is expected to grow at an annual average rate of 1% between 2017 and 2021.

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

Construction output in the East of England is expected to average 1% growth per annum over the five years to 2021, below the UK average of 1.8% over the same period.

The infrastructure sector should still remain the main driving force behind growth, with a predicted average growth rate of 4.1% to 2021. This is likely a result of the new dual carriageway to be built between the A14 in Ellington and Milton Junction on the Cambridge bypass, worth £1.5bn, and related road widening schemes. Other long-term projects include a renewable energy park in Fengate, Peterborough, worth £450m and due for completion in 2019, an offshore windfarm near Norfolk worth £1.8m due for completion in 2019, plans to increase the capacity of the Port of Felixstowe by 2020 and £193m of planned investments in flood defences.

The commercial sector is still set to be the second biggest driving force behind long term construction output growth, at a lower annual average of 1.5% over 2017 to 2021. Growth is set to peak in the near term, with expansion works at Lakeside Shopping Centre set for completion in 2019, 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.

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.

Private housing output is expected to remain relatively stable, averaging 0.3% annual average growth over the forecast period. Two of the biggest commercial and housing projects in Cambridgeshire and Thurrock are not due for completion until 2020 and 2025 respectively, suggesting a steady stream of work in the medium term.

Prospects for growth in the housing R&M sector are muted, with the sector likely to suffer the effects of increased economic uncertainty and a squeeze on disposable incomes, especially in the short term. The more uncertain home owners feel about their personal finances the more likely they are to hold back expenditure on 'big ticket' items such as extensions and conversions.

BEYOND 2021

The long term outlook for the East of England largely consists of new infrastructure projects, weighted towards the transport and energy sub-sectors. A number of road schemes are due to begin after 2020, among the most significant is the £203m widening of the A120 from Braintree to Marks Tey in Colchester, which should be completed by 2024, as well as various improvements to the A47, between Norwich and Dereham.

Sizewell C remains the largest energy project in the long-term pipeline, at a nominal cost of £18bn, and is currently in its second stage consultation process, which will remain open until 3 February 2017.

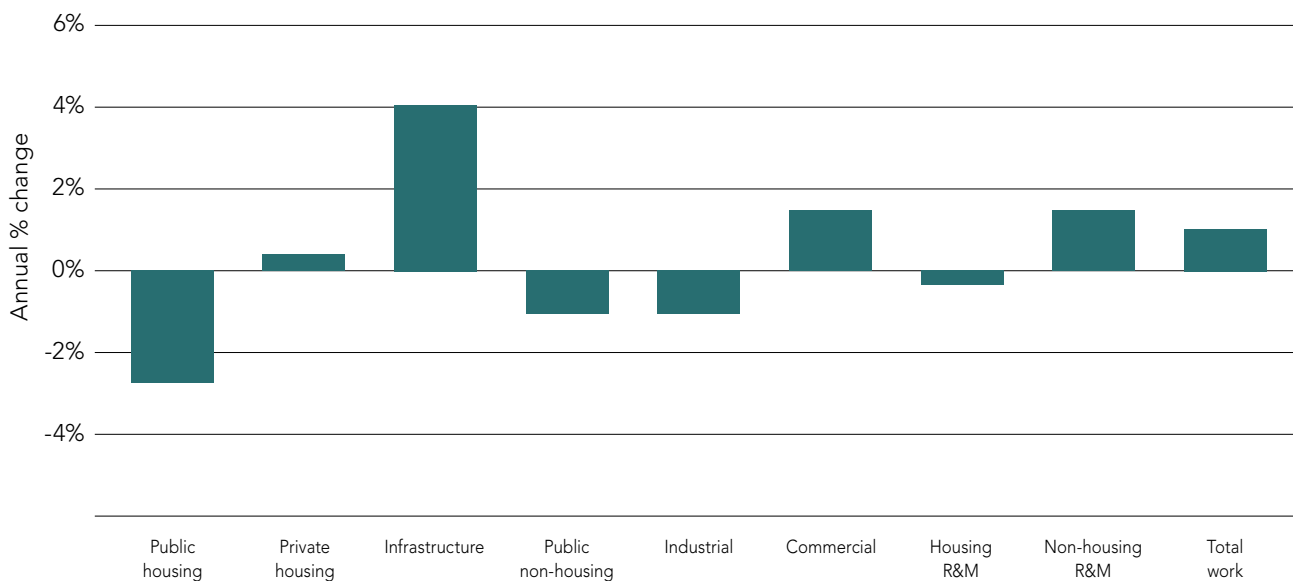


CONSTRUCTION OUTPUT – EAST OF ENGLAND (£ MILLION, 2013 PRICES)

	Estimate	Forecast annual % change					Annual average
	2016	2017	2018	2019	2020	2021	2017-2021
Public housing	291	-8%	0%	1%	-6%	-1%	-2.8%
Private housing	2,107	1%	2%	-1%	0%	0%	0.3%
Infrastructure	2,033	14%	1%	3%	3%	0%	4.1%
Public non-housing	713	-6%	4%	0%	-5%	3%	-0.9%
Industrial	377	-3%	-8%	3%	2%	2%	-1.0%
Commercial	2,077	-2%	1%	3%	3%	1%	1.5%
New work	7,598	3%	1%	2%	1%	1%	1.4%
Housing R&M	3,518	-3%	-1%	1%	1%	0%	-0.3%
Non-housing R&M	2,920	0%	1%	3%	3%	0%	1.5%
R&M	6,438	-1%	0%	2%	2%	0%	0.5%
Total work	14,036	1%	1%	2%	2%	0%	1.0%

Source: CSN, Experian.
Ref: CSN Explained.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017-2021 – EAST OF ENGLAND



Source: CSN, Experian.
Ref: CSN Explained.

CONSTRUCTION EMPLOYMENT FORECASTS FOR THE EAST OF ENGLAND

TOTAL CONSTRUCTION EMPLOYMENT FORECASTS BY OCCUPATION

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

Construction employment in the East of England is forecast to grow by an average of 0.3% annually over the five years to 2021, below the UK average of 0.6% over the same period, in line with the lower output growth.

In numbers terms, employment in the region is projected to rise by 3,210 over the forecast period, from an estimated

level of 234,460 in 2016 to 237,670 in 2021. However, the projected total for 2021 is likely to still be approximately 6% below its 2008 peak.

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 annual average growth. In contrast floorers (-2.2%), glaziers (-2.1%) plumbing and HVAC Trades (-2%) and Wood trades and interior fit-out (-1.8%) are expected to show the largest annual average contraction over the same period.

In line with the UK pattern, the managerial/supervisory and professional occupations are generally projected to fare better than the trades.



TOTAL EMPLOYMENT BY OCCUPATION – EAST OF ENGLAND

	Actual	Estimate	Forecast	
	2015	2016	2017	2021
Senior, executive, and business process managers	15,270	14,340	13,970	13,840
Construction project managers	4,460	4,380	4,420	4,820
Other construction process managers	14,680	15,260	15,340	16,790
Non-construction professional, technical, IT, and other office-based staff	31,790	33,970	33,890	35,760
Construction trades supervisors	4,350	4,570	4,710	5,370
Wood trades and interior fit-out	25,850	25,840	26,300	23,580
Bricklayers	7,570	7,660	7,990	7,640
Building envelope specialists	10,250	10,330	10,560	9,660
Painters and decorators	8,970	9,090	9,650	9,740
Plasterers	5,150	5,120	5,410	5,350
Roofers	3,920	3,950	4,070	3,780
Floorers	4,440	4,020	4,060	3,600
Glaziers	2,820	2,830	2,860	2,550
Specialist building operatives nec*	4,090	4,200	4,330	4,140
Scaffolders	2,450	2,370	2,480	2,710
Plant operatives	2,860	2,830	2,910	3,210
Plant mechanics/fitters	2,610	2,570	2,700	2,600
Steel erectors/structural fabrication	2,210	2,190	2,250	2,070
Labourers nec*	11,150	11,520	11,380	11,720
Electrical trades and installation	16,220	15,890	16,850	16,650
Plumbing and HVAC Trades	16,800	16,630	16,710	15,070
Logistics	2,790	2,930	2,910	3,100
Civil engineering operatives nec*	960	980	960	960
Non-construction operatives	1,790	1,810	1,780	1,810
Civil engineers	6,010	6,180	6,150	6,540
Other construction professionals and technical staff	13,290	13,920	13,890	15,020
Architects	4,210	4,390	4,430	4,890
Surveyors	4,760	4,690	4,600	4,700
Total (SIC 41-43)	203,450	205,280	208,490	206,520
Total (SIC 41-43, 71.1, 74.9)	231,720	234,460	237,560	237,670

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

ANNUAL RECRUITMENT REQUIREMENT (ARR) BY OCCUPATION

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

The East of England's projected ARR for 2017-2021 is 3,970, representing 1.7% of base 2017 employment, above the UK average of 1.4%. Of the 28 occupational aggregates, electrical trades and installation is the category with the highest absolute requirement (510). In terms of ratios of base 2017 employment, however, the requirement is highest for logistics personnel (6.9%), scaffolders (5.2%), roofers (4.2%) and plant operatives (4.1%). Please note that all of the ARR's presented in this section are employment requirements and not necessarily training requirements.

This is because some new entrants to the construction industry, such as skilled migrants or those from other industries where similar skills are already used, will be able to work in the industry without the need for significant retraining.

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



ANNUAL RECRUITMENT REQUIREMENT BY OCCUPATION – EAST OF ENGLAND

	2017-2021
Senior, executive, and business process managers	190
Construction project managers	130
Other construction process managers	200
Non-construction professional, technical, IT, and other office-based staff	–
Construction trades supervisors	130
Wood trades and interior fit-out	330
Bricklayers	270
Building envelope specialists	–
Painters and decorators	340
Plasterers	<50
Roofers	170
Floorers	–
Glaziers	<50
Specialist building operatives nec*	110
Scaffolders	130
Plant operatives	120
Plant mechanics/fitters	70
Steel erectors/structural fabrication	–
Labourers nec*	170
Electrical trades and installation	510
Plumbing and HVAC Trades	<50
Logistics	200
Civil engineering operatives nec*	–
Civil engineers	220
Other construction professionals and technical staff	350
Architects	110
Surveyors	140
Total (SIC 41-43)	3,150
Total (SIC 41-43, 71.1, 74.9)	3,970

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

COMPARISONS ACROSS THE UK

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

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

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

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

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

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

Employment growth across the regions and devolved nations tends to mirror that of output, but at a lower level to take account of expected productivity gains and with some minor adjustments depending on whether output growth is in high or low labour-intensive sectors. Annual average employment growth is projected to range from a

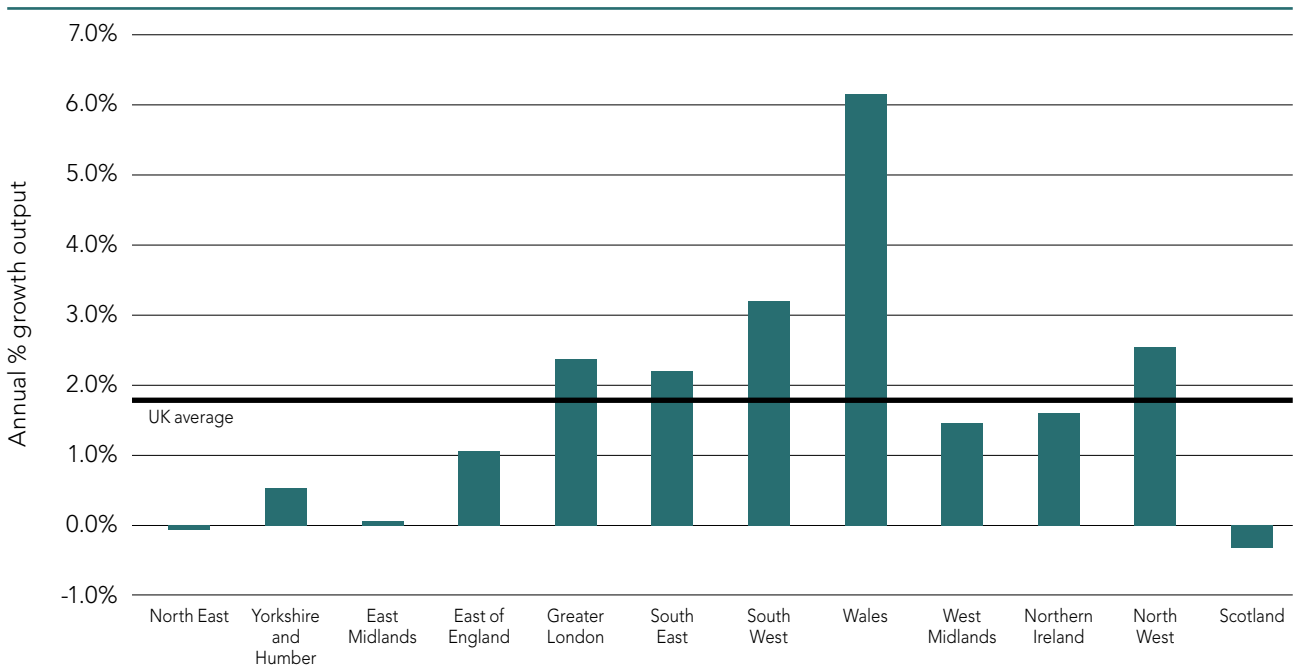
high of 2.7% in Wales to a low of -0.8% in Scotland, against a UK rate of 0.6%.

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

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

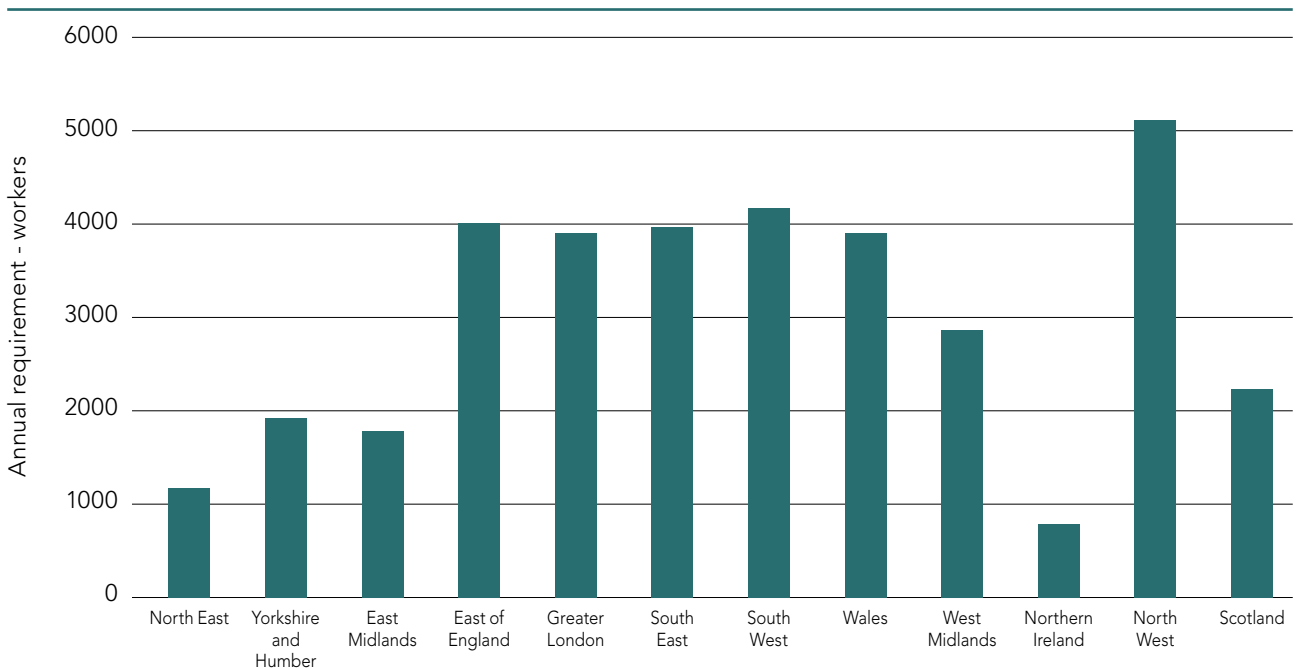
The pattern of annual recruitment requirements can look significantly different to the profile of output and employment, as some regions and devolved nations have historically strong net inflows and some suffer from large net outflows. Thus, Greater London's ARR represents just 0.9% of base 2017 employment,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

ANNUAL AVERAGE OUTPUT GROWTH BY REGION 2017-2021



Source: CSN, Experian.
Ref: CSN Explained.

ANNUAL RECRUITMENT REQUIREMENT (ARR) BY REGION 2017-2021



Source: CSN, Experian.

■ In the East of England, the highest annual recruitment requirement, in terms of numbers, is for electrical trades and installation. ■

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:

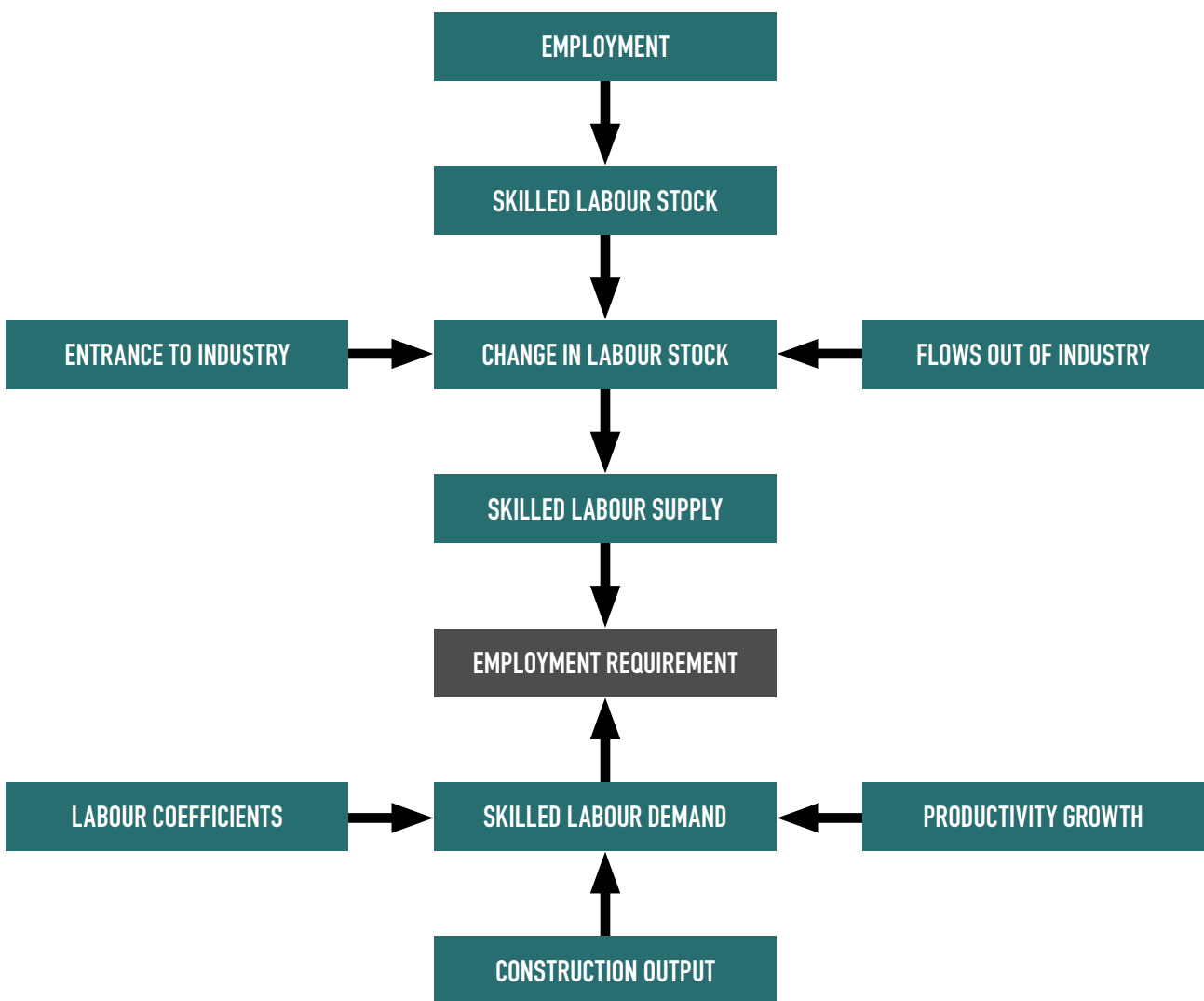
- Transfers to other industries
- International/domestic out migration
- Permanent retirements (including permanent sickness)
- Outflow to temporary sickness and home duties.

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 construction¹

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 work¹

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
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Other construction process managers

Production managers and directors in manufacturing	1121
Production managers and directors in construction	1122
Managers and directors in transport and distribution	1161
Waste disposal and environmental services managers	1255
Health and safety officers	3567
Conservation and environmental associate professionals	3550

Non-construction professional, technical, IT, and other office-based staff (excl. managers)

IT operations technicians	3131
IT user support technicians	3132
Finance and investment analysts and advisers	3534
Taxation experts	3535
Financial and accounting technicians	3537
Vocational and industrial trainers and instructors	3563
Business and related associate professionals nec*	3539
Legal associate professionals	3520
Inspectors of standards and regulations	3565
Programmers and software development professionals	2136
Information technology and telecommunications professionals nec*	2139
Estate agents and auctioneers	3544
Solicitors	2413
Legal professionals nec*	2419
Chartered and certified accountants	2421
Business and financial project management professionals	2424

Management consultants and business analysts	2423
Receptionists	4216
Typists and related keyboard occupations	4217
Business sales executives	3542
Bookkeepers, payroll managers and wages clerks	4122
Records clerks and assistants	4131
Stock control clerks and assistants	4133
Telephonists	7213
Communication operators	7214
Personal assistants and other secretaries	4215
Sales and retail assistants	7111
Telephone salespersons	7113
Buyers and procurement officers	3541
Human resources and industrial relations officers	3562
Credit controllers	4121
Company secretaries	4214
Sales related occupations nec*	7129
Call and contact centre occupations	7211
Customer service occupations nec*	7219
Elementary administration occupations nec*	9219
Chemical scientists	2111
Biological scientists and biochemists	2112
Physical scientists	2113
Laboratory technicians	3111
Graphic designers	3421
Environmental health professionals	2463
IT business analysts, architects and systems designers	2135
Conservation professionals	2141
Environment professionals	2142
Actuaries, economists and statisticians	2425
Business and related research professionals	2426
Finance officers	4124
Financial administrative occupations nec*	4129
Human resources administrative occupations	4138
Sales administrators	4151
Other administrative occupations nec*	4159
Office supervisors	4162
Sales supervisors	7130
Customer service managers and supervisors	7220
Office managers	4161

Construction trades supervisors

Skilled metal, electrical and electronic trades supervisors	5250
Construction and building trades supervisors	5330

Wood trades and interior fit-out

Carpenters and joiners	5315
Paper and wood machine operatives	8121
Furniture makers and other craft woodworkers	5442
Construction and building trades nec* (25%)	5319

Bricklayers

Bricklayers and masons	5312
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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, staggers 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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