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CITB RESEARCH

# CONSTRUCTION SKILLS NETWORK

A large, dark blue silhouette of the United Kingdom, including Great Britain and Northern Ireland, is centered on a light blue circular background. The map shows regional boundaries. A dotted white line forms a partial circle around the map.

INDUSTRY INSIGHTS:  
LABOUR MARKET INTELLIGENCE

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**UK**  
2019-2023



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## About CITB

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

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



## About Experian

Experian's Construction Futures team is a leading construction forecasting team in UK, specialising in the economic analysis of the construction and related industries in 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 contractor's activity as part of the European Commissions' harmonised series of business surveys, and a quarterly State-of-Trade survey on behalf of the Federation of Master Builders.



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



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## FOREWORD

## FOREWORD

**CONSTRUCTION, LIKE ALL INDUSTRY, CRAVES CERTAINTY.**

But we live in uncertain times.

Since the EU referendum in June 2016, Brexit and its possible outcomes have dominated industry thinking.

The uncertainty over the final terms of leaving the European Union has had a knock-on effect on two key construction areas: investment and skills.

Widespread uncertainty has meant investment, particularly in the commercial sector, has often been put on hold. This has seen contractors' plans for recruitment, skills and training delayed.

This skills forecast, which assumes an orderly exit, or an extension period leaving the EU, has also been delayed because of these unprecedented times.

Given the uncertainty seen in recent years, this skills forecast provides room for cautious optimism.

Although the estimated UK construction growth rate is, at 1.3%, lower than the forecasted UK GDP growth of 1.6% for 2019–23, the demand for construction jobs has risen.

Our forecast, the most comprehensive of its kind, shows that the number of jobs required for 2019–23 (168,500) exceeds last year's figure of 158,000. In fact construction employment is expected to reach 2.79 million in 2023, just 2% lower than its 2008 peak.

Our forecast shows that public housing (3.2%) has overtaken private housing (2.4%) as the sector forecast to see the strongest growth in the five years ahead.

In the public housing sector, the removal of the local authority borrowing cap could be a game-changer. The potential impact of this move has been estimated to be worth £1bn a year in new investment.

Transport and energy projects will be the main drivers of infrastructure growth from

2019–23. Hinkley Point C's main works are due to start this year while activity on phase 1 of HS2 should increase. But Wylfa Newydd in Wales has joined Moorside in the North West as nuclear new build projects that have stalled. This means Wales, which has led the CSN forecast for the last four years, has fallen down the rankings.

It hasn't all been bleak for Wales. Autumn 2018 saw the opening of the Construction Wales Innovation Centre (CWIC), a unique, CITB-funded training facility that will see an estimated 1,200 students trained across Wales each year. As CWIC demonstrates, CITB will continue to strive to provide the skills and training construction needs.

During the last 12 months we helped over 800 Carillion apprentices find new jobs. We launched a £500,000 fund to train over 150 construction workers as mental health first aid instructors. And CITB launched our biggest ever funding opportunity, Pathways into Construction – a £5m commission aiming to connect employers with people who don't traditionally enter the industry.

Soon, we will launch an ambitious £2.35m digital skills funding commission to help modernise the industry by equipping leaders with skills to digitalise their business.

Though great opportunities are in the offing, the last 12 months have been challenging for construction. The collapse of Carillion was a huge blow to the sector. The drop of nearly 16,000 in the number of construction businesses at the start of 2018, compared with the start of 2017, is further evidence of challenging times.

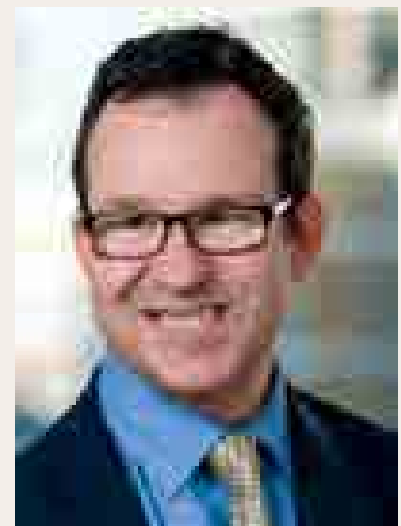
There may yet be more political and economic turbulence ahead. For this reason CITB is examining the impact of a potential No Deal scenario. We will also produce a fuller version of this abbreviated forecast when more economic clarity emerges.

Forecasting is a risky business at the best of times. But given the huge uncertainties over the last two years, construction's skills estimates have remained relatively steady.

So with Brexit nearing (the UK is scheduled to leave the EU on March 29), more jobs needed and major, modern recruitment drives planned, there is cause for cautious optimism.

Construction remains a steady career bet in an insecure jobs market.

**Steve Radley**  
CITB Director of Policy



**CONSTRUCTION INDUSTRY STRUCTURE 2018 – UNITED KINGDOM**

SECTOR	OUTPUT SHARE (2018 EST)
PRIVATE HOUSING	22.3%
COMMERCIAL	18.0%
HOUSING R&M	17.4%
NON-HOUSING R&M	17.3%
INFRASTRUCTURE	12.6%
PUBLIC NON-HOUSING	5.8%
PUBLIC HOUSING	3.7%
INDUSTRIAL	3.0%

SOURCE: ONS/EXPERIAN



SOURCE: ONS, CSN, EXPERIAN.

## ANNUAL RECRUITMENT REQUIREMENT (ARR) BY OCCUPATION

NON-MANUAL OCCUPATIONS	TOTAL EMPLOYMENT	2019 2023	ARR
Non-construction professional, technical, IT, and other office-based staff	388,320 410,890		4,860
Other construction process managers	208,050 222,150		3,420
Senior, executive, and business process managers	184,750 191,620		1,400
Construction trades supervisors	49,840 54,250		850
Construction project managers	49,330 52,670		580
MANUAL OCCUPATIONS			
Wood trades and interior fit-out	263,530 259,450		2,380
Electrical trades and installation	188,760 178,840		1,570
Plumbing and HVAC Trades	166,720 162,670		1,900
Labourers nec*	130,010 134,010		1,770
Painters and decorators	112,800 110,920		960
Building envelope specialists	108,290 105,480		560
Bricklayers	72,240 71,540		810
Specialist building operatives nec*	58,440 55,950		820
Plasterers	52,100 49,230		250
Roofers	46,930 45,600		750
Plant mechanics/fitters	42,740 41,310		580
Plant operatives	41,600 43,680		980
Glaziers	30,840 29,850		280
Floorers	26,150 24,960		290
Steel erectors/structural fabrication	24,430 24,150		430
Logistics	24,240 25,710		620
Scaffolders	23,040 24,730		720
Civil engineering operatives nec*	22,000 23,000		180
Non-construction operatives	36,930 39,290		-
PROFESSIONAL OCCUPATIONS			
Other construction professionals and technical staff	208,050 224,480		3,260
Surveyors	71,920 77,900		1,420
Civil engineers	56,480 60,980		1,190
Architects	43,630 48,530		870

## SECTORS

## SECTORS

Our forecast shows that public housing (3.2%) has succeeded private housing (2.4%) as the sector forecast to see the strongest growth in the five years ahead.

### PUBLIC HOUSING

Public housing (3.2%) is the sector forecast to see the strongest growth. Apart from further financial support from local and national government, the removal of the local authority borrowing cap could be a game-changer in the public housing sector. The potential impact of this move has been estimated to be worth £1bn a year in new investment.

### INFRASTRUCTURE

Transport and energy projects will be the main drivers of infrastructure output growth from 2019-23. Hinkley Point C's main works are due to start this year while activity on phase 1 of HS2 should increase. Wylfa Newydd, in Wales, has joined Moorside in the North West as nuclear new build projects that have stalled.

Further impetus will come when Highways England's roadbuilding programme gains momentum, although there are concerns that the agency is struggling to keep projects on schedule, not least because of capacity issues. According to the Autumn 2018 update of the Government's National Infrastructure and Construction Pipeline (NICP), potential total expenditure on infrastructure projects (public and private) is indicated at around £151bn (2017/18 prices) between 2018/19 and 2020/21, with a further £218bn in the pipeline post-2021.

### RESIDENTIAL/HOUSING

The private housing market remains quiet compared to previous growth periods, with property transactions in 2018 likely to be less than the 1.2 million they have remained at for the last four years. With private housing output at historic highs, and Brexit uncertainty, room for robust

growth is limited. However, in the absence of a recession, the ongoing mismatch between supply and demand is likely to see sector activity rise, albeit more moderately than recent years.

### EDUCATION AND HEALTH CONSTRUCTION

The non-housing building sectors fared poorly in 2018 (industrial construction excepted) and are expected to continue to underperform relative to the housing and infrastructure sectors.

Government focus on housing has meant less emphasis on other areas. Output in the public non-housing sector in 2018 is estimated to have fallen to its lowest level since 2007 in real terms. Anecdotal evidence suggests work under the Priority School Building Programme has not emerged as anticipated, because government has cooled on free schools.

The National Construction and Infrastructure Pipeline indicated a falling profile of investment in the public non-residential sector between 2018-19 and 2020-21, with only the health building sector showing a potential increase.

### INDUSTRIAL

The components of industrial construction are likely to move in different directions as Brexit uncertainties impact on them. The manufacturing sector is expected to be negatively affected by trading uncertainties due to Brexit, while the warehouse sub-sector could benefit from the need for more storage facilities as current 'just in time' systems become harder to maintain. The two factors are expected to largely cancel each other out, in forecasting terms, giving only modest growth for the sector as a whole.

### COMMERCIAL CONSTRUCTION

The expected decline in commercial construction, as a result of the cautious stance taken by investors in the aftermath of the vote to leave the European Union (EU), has finally come to pass; output was down an estimated 5% in real terms in 2018. It has taken time for this more cautious stance to feed through into the statistics. The 24% decline in new orders for office construction in 2017 is telling, although they did pick up a little last year.

### RETAIL CONSTRUCTION

Retail construction remains in the doldrums and the strong growth seen recently in the leisure sub-sector has ended. The prognosis for the commercial sector as a whole remains poor for the next couple of years, with output only starting to grow again in 2021.

### REPAIR AND MAINTENANCE (R&M)

Housing repair & maintenance (R&M) seems to be benefiting from the quieter housing market, where less churn is leading to more being spent on improving current properties. However, this will not necessarily mean a continuous upward trend, as consumer confidence, job security and disposable incomes remain significant drivers of household expenditure in the sector.

The aftermath of the Grenfell fire tragedy is expected to lead to the government committing £400m to local authorities to help with public remediation work.

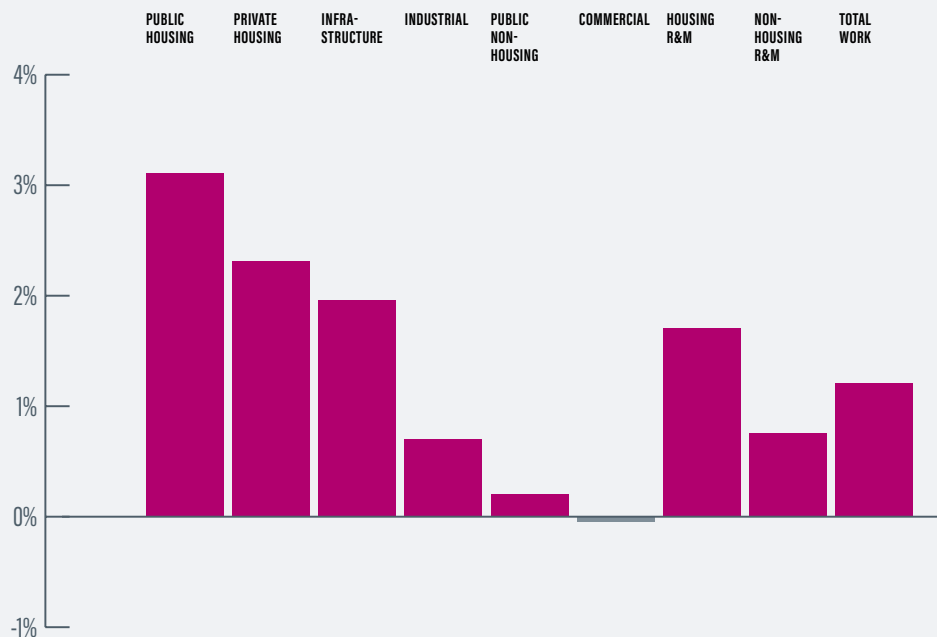
Growth across all the new work sectors is projected to average 1.4% a year over the 2019-23 period, with the R&M sector seeing slightly slower expansion of 1.2% per annum.



### CONSTRUCTION OUTPUT - UK (£ MILLION, 2016 PRICES)

	ACTUAL	FORECAST (ANNUAL % CHANGE, REAL TERMS)					ANNUAL AVERAGE
	2018	2019	2020	2021	2022	2023	2020-2023
Public housing	6,219	3%	6%	3%	2%	2%	3.2%
Private housing	37,022	3%	4%	0%	2%	3%	2.4%
Infrastructure	20,957	9%	4%	0%	0%	-3%	1.9%
Industrial	4,994	0%	1%	2%	2%	-2%	0.6%
Public non-housing	9,670	-1%	-1%	1%	0%	2%	0.2%
Commercial	29,843	-5%	0%	2%	3%	0%	0.0%
<b>New work</b>	<b>108,706</b>	<b>1%</b>	<b>3%</b>	<b>1%</b>	<b>2%</b>	<b>1%</b>	<b>1.4%</b>
Housing R&M	28,851	3%	4%	1%	1%	0%	1.7%
Non-housing R&M	28,698	1%	1%	1%	0%	0%	0.7%
<b>Total R&amp;M</b>	<b>57,549</b>	<b>2%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>0%</b>	<b>1.2%</b>
<b>Total work</b>	<b>166,255</b>	<b>2%</b>	<b>3%</b>	<b>1%</b>	<b>1%</b>	<b>0%</b>	<b>1.3%</b>

### ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2019-2023 - UK



SOURCE: CSN, EXPERIAN.

## EMPLOYMENT FORECASTS

# EMPLOYMENT FORECASTS

Employment is projected to rise over the 2019 to 2023 period at an annual average rate of 0.5%, in line with the whole economy average. UK construction employment will reach 2.79 million in 2023, just 2% lower than the 2008 peak.

### DEMAND: ANNUAL RECRUITMENT REQUIREMENT

The average annual recruitment requirement (ARR) is estimated at 33,700 for 2019-23, slightly higher than that predicted for the 2018-22 period (31,600).

Since employment growth returned in 2014, it has been stronger among the managerial/admin and professional occupations and, weaker among the trades/elementary ones, although most of the 28 occupational categories have seen some increase. This trend is expected to continue from 2019-23.

### PROFESSIONS IN HIGH DEMAND

The 33,700 ARR means industry will need to recruit an extra 168,500 workers over the next five years.

In absolute terms, the highest ARR for construction roles are for construction

process managers (3,420), other construction professional & technical staff (3,260), and wood trades & interior fit-out (2,380).

As a proportion of base 2019 employment, the biggest requirements are predicted for scaffolders (3.1%), logistics personnel (2.6%), and plant operatives (2.3%).

## 2.6%

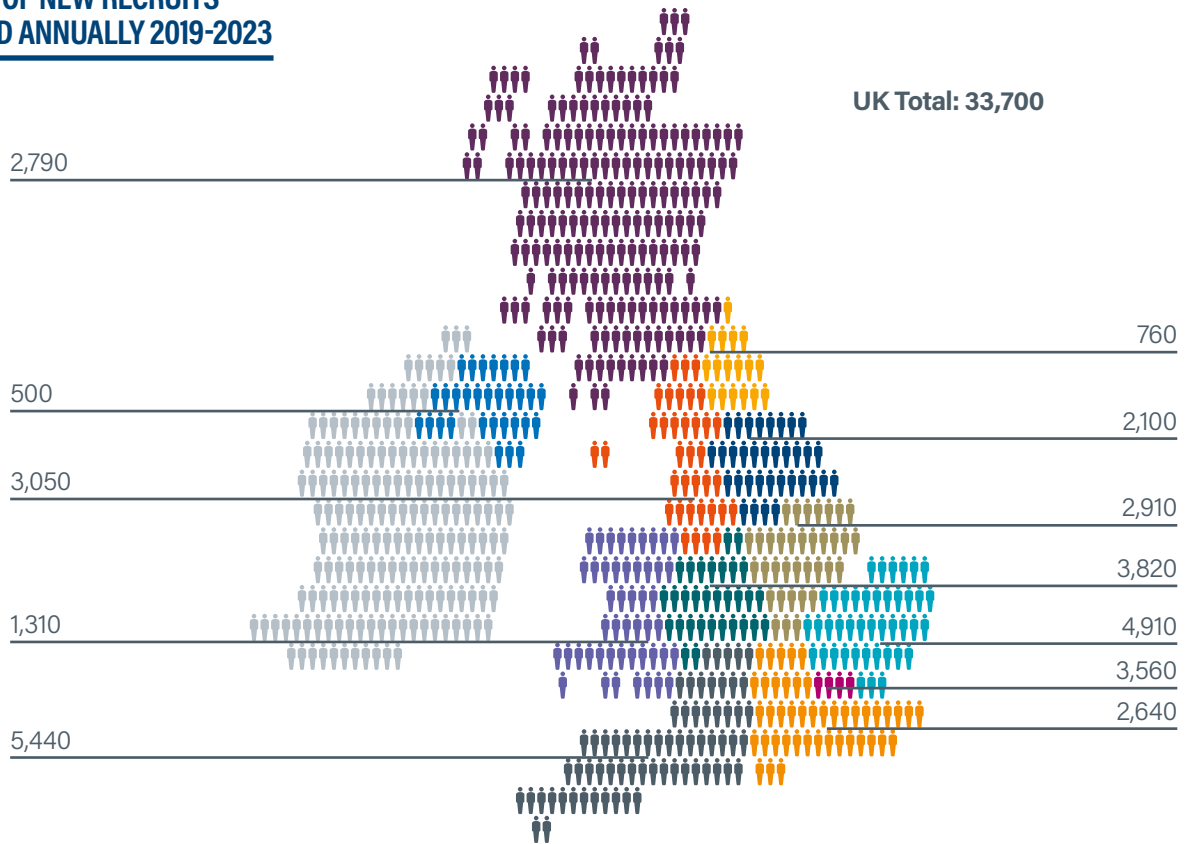
EMPLOYMENT INCREASE  
BY 2023

## 15 in 28

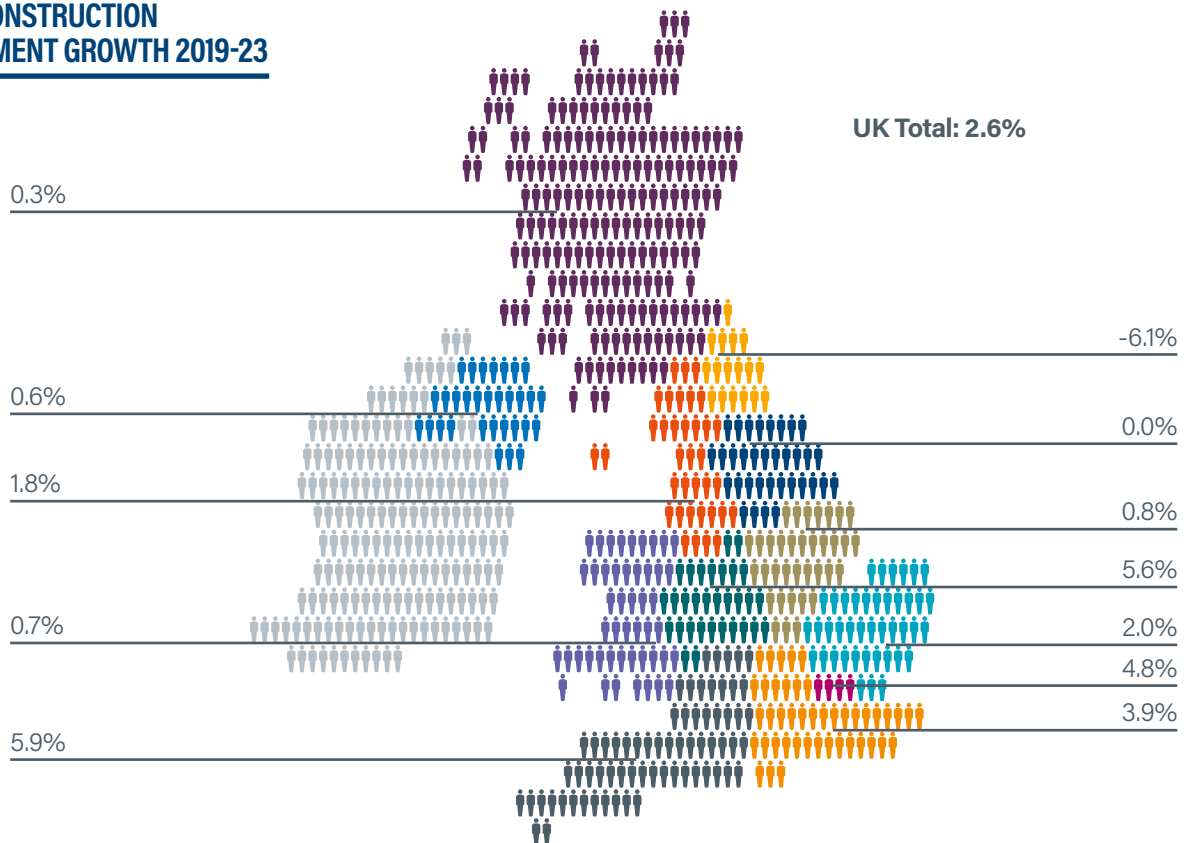
EXPECTED GROWTH IN  
OCCUPATIONAL  
CATEGORIES



## NUMBER OF NEW RECRUITS REQUIRED ANNUALLY 2019-2023



## TOTAL CONSTRUCTION EMPLOYMENT GROWTH 2019-23





# NATIONS AND REGIONS

As always, the picture is mixed across the regions and devolved nations. Factors such as overall economic performance, differing spending priorities of the devolved administrations, demographic factors, and the location of mega infrastructure projects, all drive and determine stronger or weaker construction growth.

The following nations and regions are ranked in terms of construction output growth.

## 1. WEST MIDLANDS: 2.3% AND SOUTH WEST: 2.2%

The most buoyant of the English regions are projected to be the West Midlands and South West.

Infrastructure output is likely to remain the key driving force for expansion in the **South West**, largely owing to work on Hinkley Point C nuclear power plant. Two years after construction began, Hinkley Point is on track to become fully operational in 2025.

An anticipated 10.6% annual average rise in infrastructure output is likely to be the single largest driver of overall expansion in the **West Midlands**, supported by increased work on the HS2 scheme, preparations for the Commonwealth Games and a range of improvements to the M6 motorway.

## 2. GREATER LONDON: 2.1%

**Greater London** is projected to see decent growth averaging 2.1% over 2019-23, driven by infrastructure work on HS2 and the Thames Tideway, and strong housing growth, despite the current weakness of house prices in the region.

Demographic pressures remain strong in the capital, but growth may be strongest in the rental sector – both social and private – given that house prices in London continue to be unaffordable to many. The Mayor of London recently pledged £288m to four housing associations to help build an extra 4,705 affordable homes across the

capital by March 2022. This is to help meet his target of 116,000 new affordable homes in the next four years.

## 3. EAST MIDLANDS AND EAST OF ENGLAND: 1.2%

The **East Midlands** is forecast to have an annual average growth rate of 1.2% for construction output from 2019-2023, slightly lower than the UK average growth rate of 1.3%. Public sector housing (3.8%) and Commercial (2.6%) work are set to slow the growth rates in the region over the next five years. Construction employment in the region is forecast to grow at an average rate of 0.2% per year, rising from just under 173,000 workers at the end of 2018 to over 174,000 by 2023. Growth is expected to be strongest for professional occupations such as civil engineers and surveyors.

With an annual average growth rate of 1.2% for construction output from 2019-2023, the **East of England** is again slightly below the forecasted UK average growth rate. Public sector housing and non-housing work show the strongest growth rates with 3.7% for housing and 3.6% for non-housing work. Construction employment in the region is also forecast to grow at an average rate of 0.4% per year, rising from nearly 245,000 workers at the end of 2018 to nearly 250,000 by 2023. Growth is expected to be strongest for managerial, professional and technical occupations.

## 4. SOUTH EAST: 1.1%

The forecast is for construction output growth in the **South East** to grow at an average annual rate of 1.1% from 2019 to 2023, slightly lower than the UK growth rate of 1.3%. Growth in the region will be

mainly driven by private housing (3.5%) with public housing (1.9%) also set to increase.

With output growing, the construction workforce in the South East is also set for an average annual increase of 0.8%. This means that the workforce of over 413,000 at the end of 2018 is set to increase to nearly 429,500 by the end of 2023. This growth is spread across a range of managerial, professional, technical and skilled trade occupations.

## 5. NORTHERN IRELAND AND NORTH WEST: 0.8%

There is little doubt that the ongoing lack of a government in Stormont is impacting both the economy and construction in **Northern Ireland**, directly through stasis in the signing-off of public projects, and indirectly through loss of confidence in the private sector.

However, strong underlying demand for social housing is likely to drive expansion in the sector there are a number of large long-term housing developments in Northern Ireland, including 550 new homes in the Bangor area. This should help drive steady output streams in the private housing sector.

The **North West**, which was reported to be one of the strongest regions for the 2018-22 period, has gone down the rankings with growth averaging 0.8% a year for 2019-23. This is largely to the loss of the Moorside new nuclear build project.

## 6. YORKSHIRE AND HUMBER: 0.6%

Construction output in **Yorkshire and Humber** is forecast to grow at an average annual rate of 0.6% from 2019 to 2023, which is less than half of the UK growth rate of 1.3%. Work in the infrastructure (2.2%) and public-housing sectors (2.5%) are the most prominent drivers of growth, along with private housing (0.9%) and housing repair and maintenance (1.6%).

The low level of output growth in the region means that construction employment is forecast to remain steady at around 200,000 workers between 2019 and 2023. Like other regions, Yorkshire and Humber is expected to see slightly more demand for managerial, professional and technical occupations.

## 7. WALES AND SCOTLAND: 0.5%

**Wales**, which has led the growth rankings for a number of years, has seen a significant reduction in growth due to the recent announcement, from Hitachi, that the Wylfa nuclear new build project has been put on hold. Annual average output growth is projected to average only 0.5% a year without this project, leading to marginal employment growth of 0.1% a year.

However, there are some significant transport projects in the pipeline, led by the £1.4bn M4 upgrade around Newport, which, it is hoped, will now start this year. Also in the 2019 pipeline in is the final section of the A465 Heads of the Valley upgrade, worth £500m, and the South Wales Metro at £440m.

Construction output in **Scotland** is expected to grow by an annual average of 0.5% from 2019-23, leading to marginal employment growth over the period. Infrastructure output is projected to fall sharply for one more year in 2019 from its very high peak in 2015, but then begin to stabilise as work increases on projects such as the dualling of the A9 between Perth and Inverness, and the £1.3bn electricity interconnector between Scotland and Norway, scheduled to start in 2020. Scotland is also likely to see good growth in public housing and housing repair and maintenance, which will compensate for falls in the non-housing building sectors.

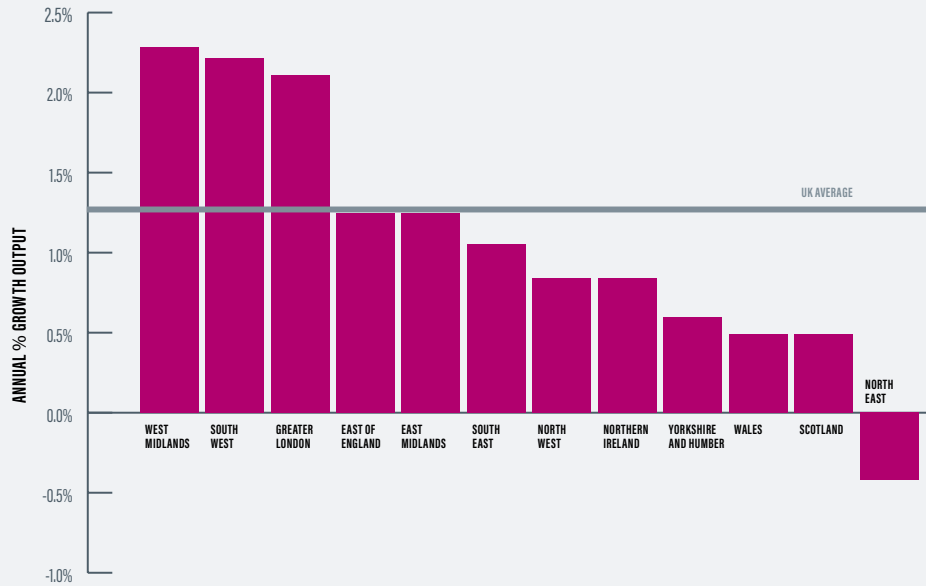
## 8. NORTH EAST: -0.4%

The **North East** is the only region predicted to see a decline between 2019 and 2023, although the drop takes place in the first year of the forecast period. Expansion returns thereafter, but less housing pressure and lack of large infrastructure projects means that year-on-year growth is modest.



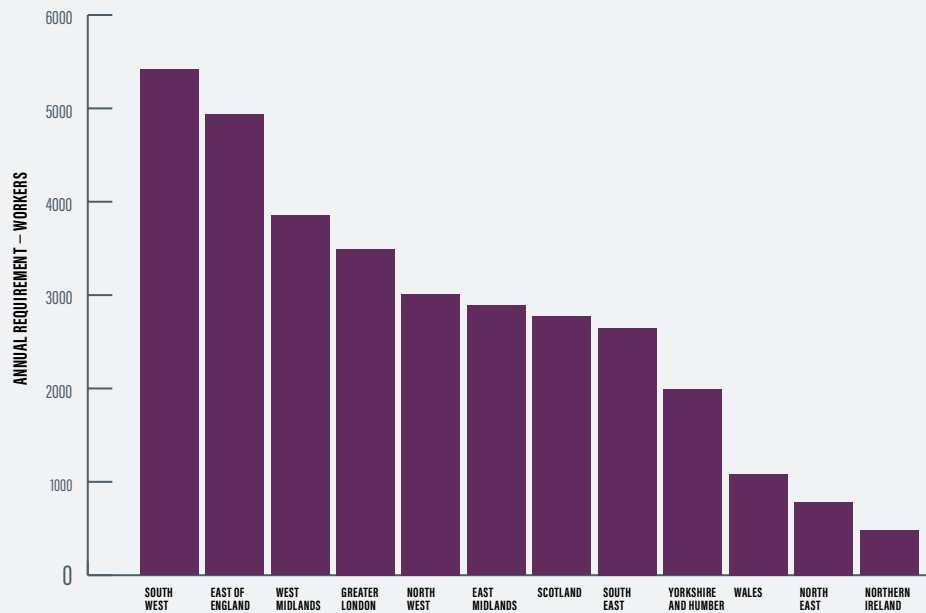
### ANNUAL AVERAGE OUTPUT GROWTH BY REGION 2019-2023

SOURCE: CSN EXPERIAN.  
REF: CSN EXPLAINED.



### ANNUAL RECRUITMENT REQUIREMENT (ARR) BY REGION 2019-2023

SOURCE: CSN EXPERIAN.  
REF: CSN EXPLAINED.





Employment is projected to continue to rise over the 2019 to 2023 period, at an annual average rate of 0.5%, in line with the whole economy average, reaching 2.79 million in 2023, just 2% lower than the 2008 peak.

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# WALES

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Growth slows after suspension of work on Wylfa nuclear new build, however Wales is showing an average increase in work of 0.5% between 2019-23. 6,550 new workers will be needed.

## GROWTH RATE

With work on Wylfa nuclear new build being suspended, the annual average growth rate for Wales has been revised down to 0.5% between 2019 and 2023. Modest growth is forecasted for private housing (1.3%), public non-housing (1.4%) and housing repair & maintenance work (1.8%), however the infrastructure sector is now expected to show no significant growth and in previous years it has been a key sector in the Welsh forecast.

## JOB CREATION

The level of output growth in Wales gives an average annual increase of 0.1% in the construction workforce. This means that the workforce of nearly 111,700 at the end of 2018 is set to show a slight increase to 112,400 by the end of 2023.

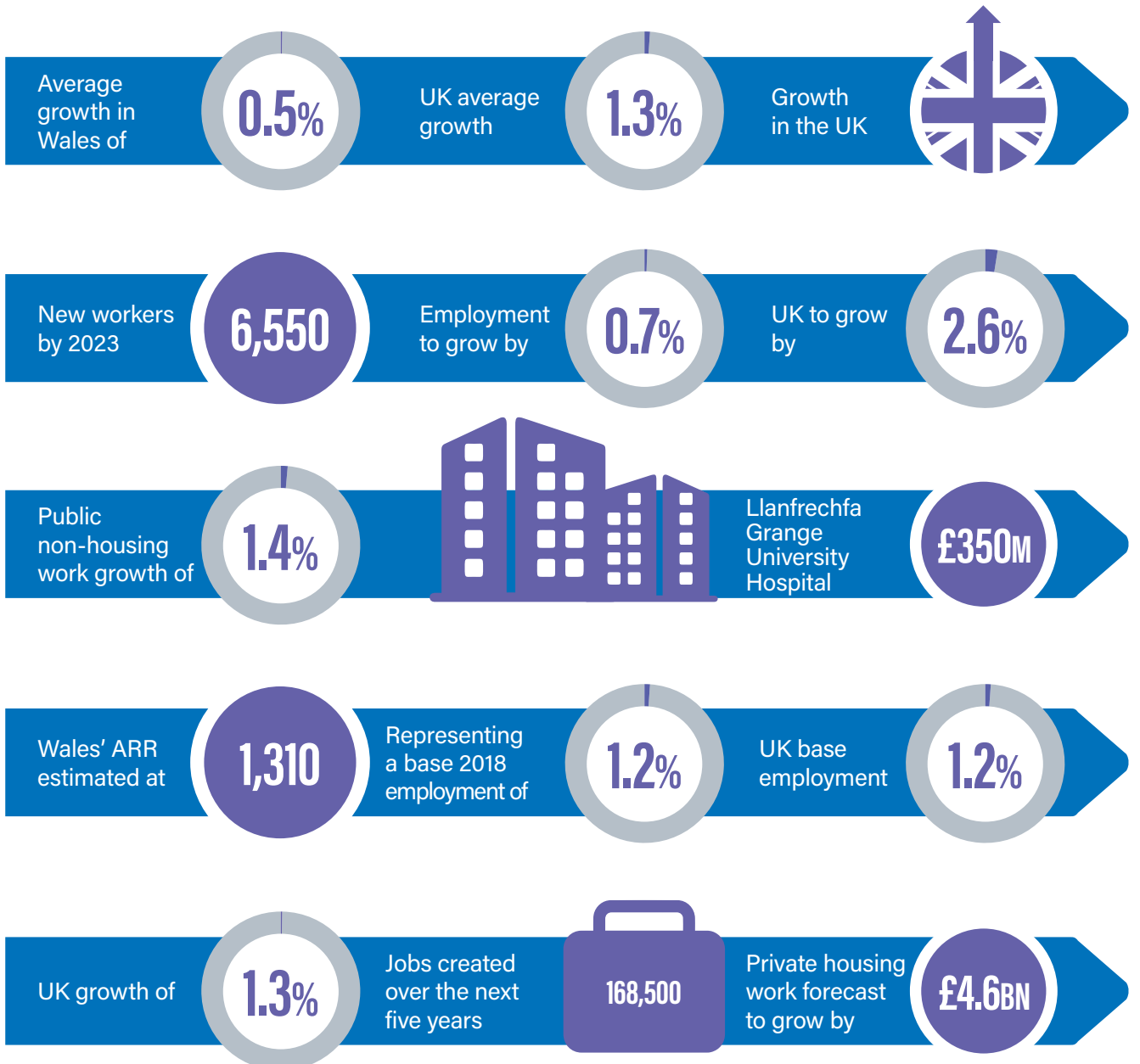
## ANNUAL RECRUITMENT REQUIREMENT (ARR)

Wales fares slightly better on the level of annual average recruitment requirement, which is 1.2% per year, based on 2018 employment levels, and on par with the UK figure (1.2%). This means Wales will need to recruit an extra 1,310 new workers each year to deliver the expected work output.

## MAIN GROWTH DRIVERS/CONTRACTS

The recent cancellation of the Wylfa Newydd nuclear project has severely hampered construction growth in Wales in terms of its annual average expansion. Modest growth is still expected, however, owing to expansion in private housing output and a likely recovery in the public non-housing sector. In the case of the latter, work is apparently progressing well on the £350m Llanfrechfa Grange University Hospital since construction began in July 2017, with completion due by autumn 2020. The latest indications for the Velindre Cancer Centre redevelopment is that construction on the £210m project could start in late 2019.





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# SCOTLAND

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13,950 new recruits needed over next five years to maintain Scotland's construction employment level at over 228,000 workers.

## **GROWTH RATE**

With an annual average growth rate of 0.5% per year between 2019 and 2023, construction output in Scotland is lower than the UK forecast of 1.3% per year. However, Scotland's forecast is influenced by infrastructure spend coming down from historically high levels recorded in 2015. From 2019 to 2023, housing work will be the key sector for growth covering public housing (3.6%), private housing (1.3%) and housing repair & maintenance (2.7%).

## **JOB CREATION**

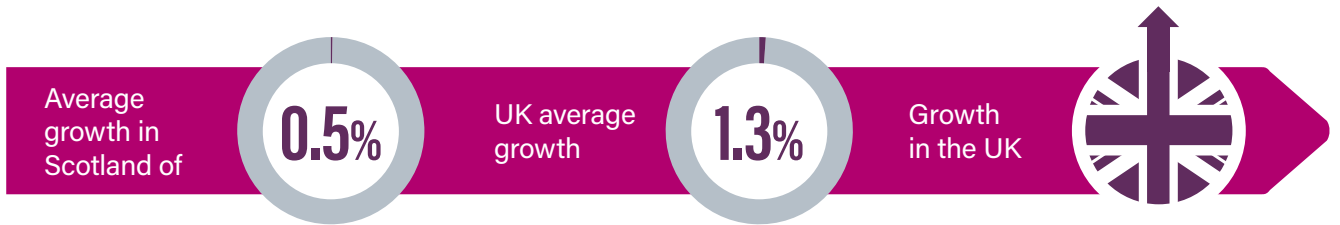
Construction employment in Scotland is forecast to remain stable with an annual average growth rate of only 0.1% between 2019 and 2023. This means that construction employment only shows a very slight increase from 228,200 in 2019 to 228,900 by 2023.

## **ANNUAL RECRUITMENT REQUIREMENT (ARR)**

Although the employment forecast remains stable, Scotland's construction sector will still need to recruit an extra 2,790 workers per year. As a percentage of 2018 employment, this level of average annual recruitment requirement is 1.2% of Scotland's 2018 construction workforce, matching the overall UK requirement of 1.2% per year.

## **MAIN GROWTH DRIVERS/CONTRACTS**

Public housing remains the most promising sector in the devolved nation, with an annual average growth rate of 3.6% forecast for the five years to 2023. Aberdeen City Council has committed to a programme of building 2,000 new council homes across the city over the next five years and Cassiltoun Housing Association is due to start work on 45 new homes across three sites in Glasgow known as the 'Barlia 3', with completion due in December 2019. Forth Housing Association is currently taking forward 88 new homes in Stirling, with a further 22 proposed. Private housing should also hold up well. Foremost of which, the proposed East Kilbride Community Growth Area (CGA) has received a funding boost from the £1.13bn Glasgow City Region City Deal. The funding will allow more than 2,500 homes to be built.



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# NORTHERN IRELAND

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Growth of 0.8% from 2019 to 2023, mainly driven by strong underlying demand for social housing (3.8%) along with steady output in the private housing sector (1.1%).

## GROWTH RATE

The lack of a government in Stormont will be impacting both the economy and construction in Northern Ireland, directly through delays in the signing-off of public projects, and indirectly through loss of confidence in the private sector. However, our forecast is for construction output growth of 0.8% from 2019 to 2023, mainly driven by strong underlying demand for social housing (3.8%) along with steady output streams in the private housing sector (1.1%) and housing repair, maintenance and improvement work (3.2%).

## JOB CREATION

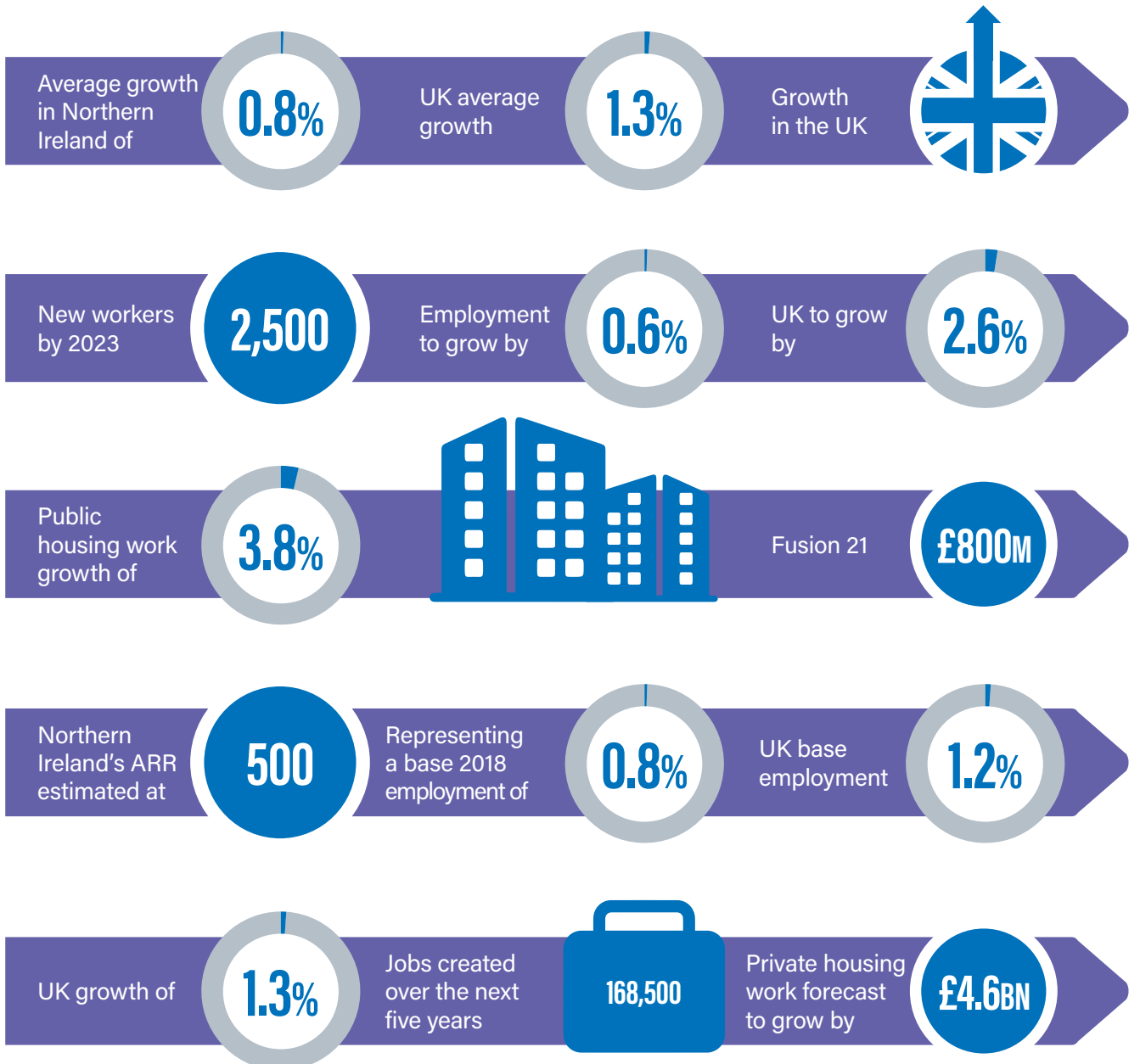
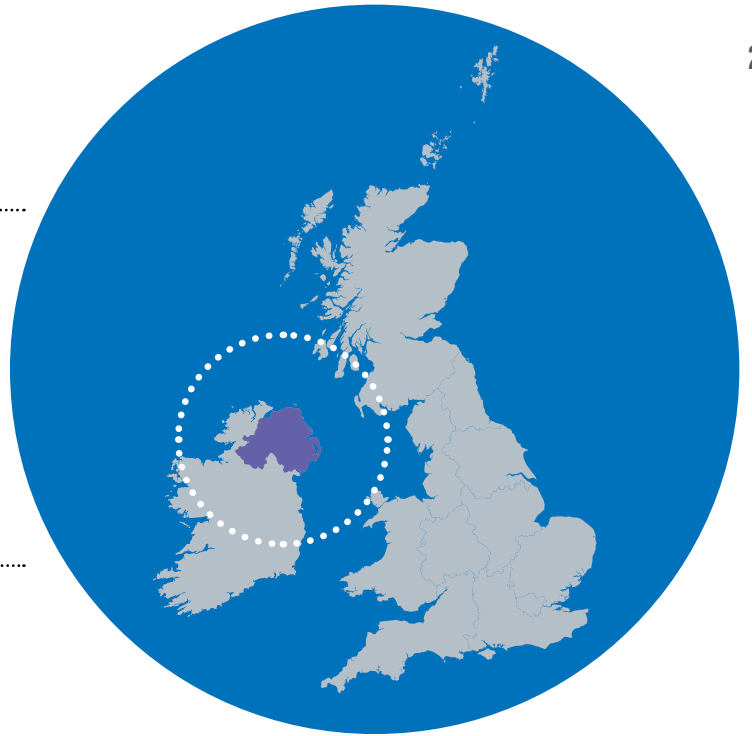
Construction employment in the nation is also forecast to remain steady, with only a marginal average increase of 0.1%. This means that construction employment in Northern Ireland will remain around 61,000–62,000 workers between 2019 to 2023, with a slight increased demand for some managerial and professional occupations.

## ANNUAL RECRUITMENT REQUIREMENT (ARR)

With output increasing slightly and employment stable, Northern Ireland will still need to recruit into the sector, as the forecast is for an average ARR for 500 new workers each year is equivalent to 0.8% of the base 2018 workforce.

## MAIN GROWTH DRIVERS/CONTRACTS

Of the new work sectors, both public and private housing are likely to be the only significant drivers of overall expansion, with all work (including repair & maintenance) set to rise by just 0.8% per annum to 2023. In terms of public housing, UK procurement organisation Fusion 21 will be launching its four-year Construction Works and Improvement Framework, worth around £800m, in April 2019. The framework is designed to deliver capital programmes largely in the housing, education and health sectors. A number of projects currently in the pipeline should drive steady expansion in private housing output. Of the other sectors, recent cancellations and delays will weigh heavily on infrastructure and public non-residential output in particular.



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# NORTH EAST

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Although output will decline, the North East region will need 3,800 new workers from 2019-23.

## GROWTH RATE

The North East is the only region predicted to see output decline between 2019 and 2023, with an annual average growth rate of -0.4%. The main impact is likely to be in 2019 with output stabilising in 2020 and then showing growth until 2023. Underlying demographics in the region aren't driving housing demand and a lack of large infrastructure projects means that year-on-year growth is modest.

## JOB CREATION

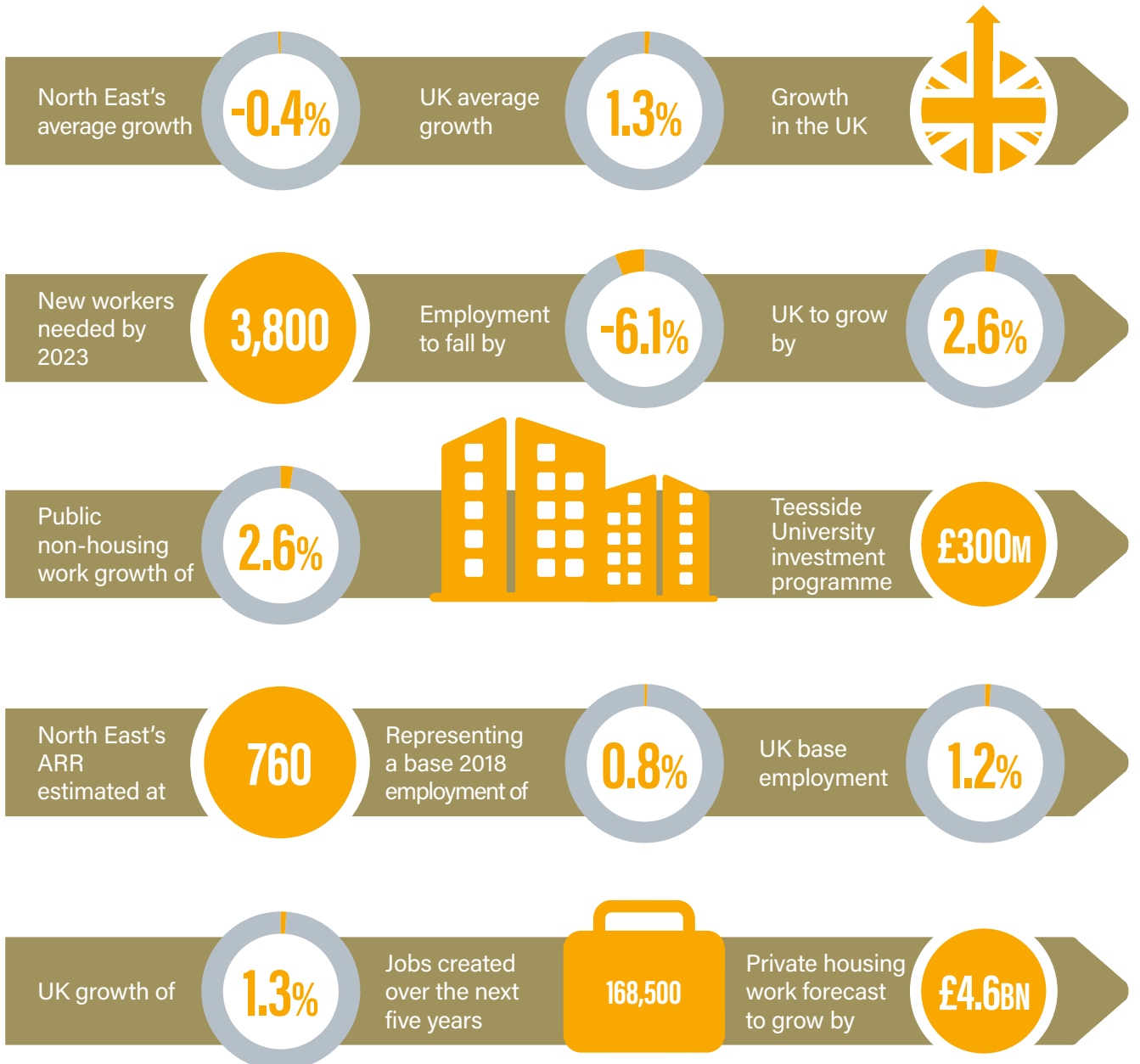
With output declining, construction employment in the region is also forecast to decline at an average rate of -1.2% per year. This means that construction employment in the North East of just over 94,000 at the end of 2018 is expected to reduce to nearly 89,000 by 2023. Skilled trades roles such as roofers, specialist builders and electricians could be hardest hit.

## ANNUAL RECRUITMENT REQUIREMENT (ARR)

Although output and employment are forecast to decline, the North East still has an average ARR for 760 new workers each year, which is equivalent to 0.8% of the base 2018 workforce.

## MAIN GROWTH DRIVERS/CONTRACTS

The industrial sector is expected to see the biggest average increases per annum, with a number of projects currently ongoing or scheduled to start this year, including plans for a £70m mineral processing plant on Teesside. Public Non-Residential output should also fair well, supported by Teesside University's £300m ten-year investment programme, Durham University's new £105m student complex and a £39m teaching building for Newcastle University. MGT Power's £650m Tees Renewable Energy Plant at Teesport remains the largest infrastructure project at present, with commissioning planned to start this year. The region's biggest sector, private housing, is anticipated to reach a new high of £1.52bn by 2023 (2016 prices).



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# NORTH WEST

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Private housing work will be the main contributor to the North West's 0.8% annual average growth in construction output. 15,250 new workers will be needed from 2019-23.

## GROWTH RATE

Having shown strong growth in recent forecasts, output growth in the North West is estimated at an average of 0.8% per year from 2019 to 2023, mainly driven by private housing (1.5%), infrastructure (1.7%), and public housing (2.7%) work.

## JOB CREATION

Construction employment in the North West is forecast to increase between 2019 and 2023, with an average annual increase of 0.4% per year. This means that construction employment will increase from 279,000 in 2019 to over 284,000 by 2023, with growth covering the range of occupations.

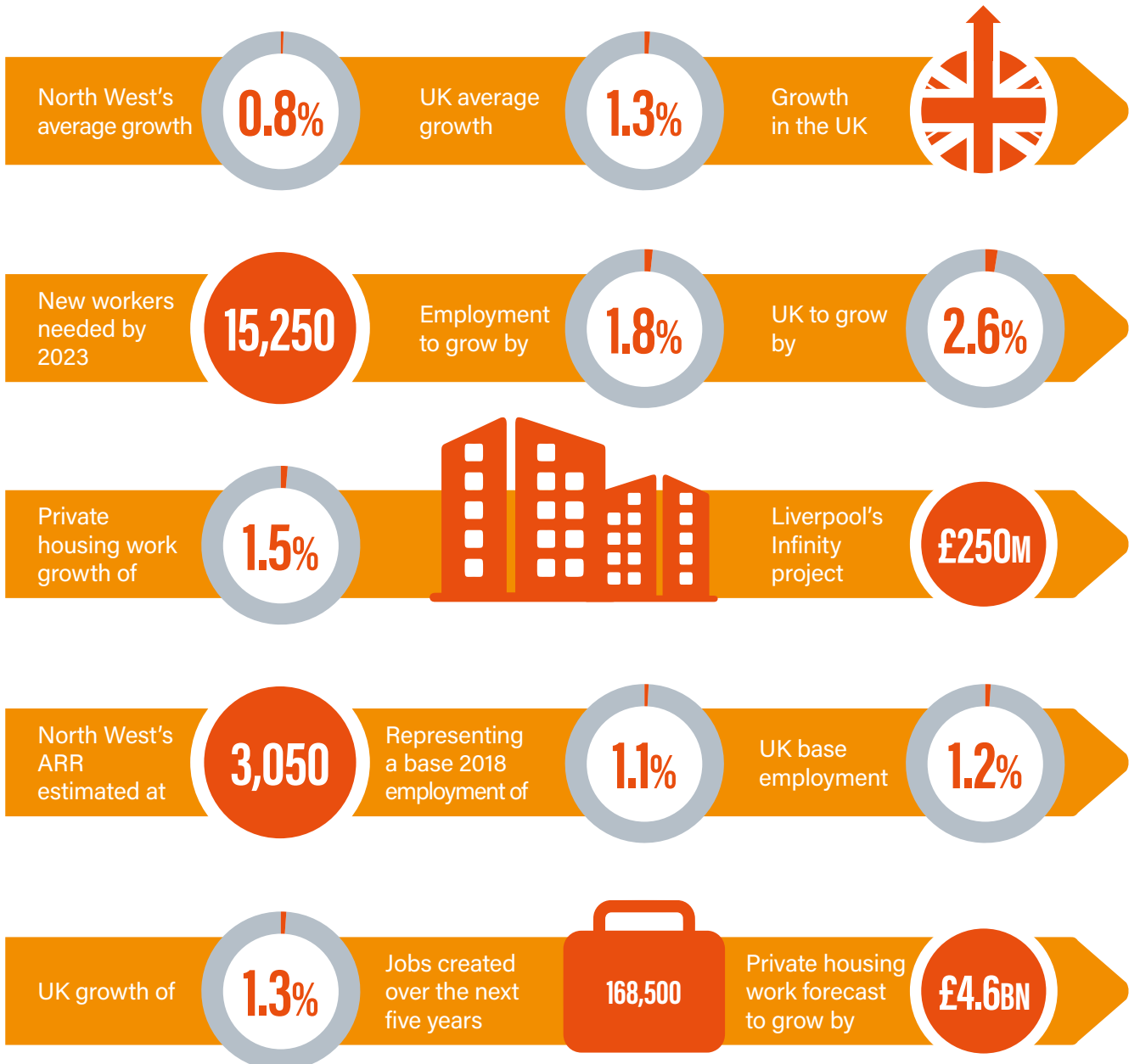
## ANNUAL RECRUITMENT REQUIREMENT (ARR)

The region is forecast to have an average ARR for 3,050 new workers each year, which is equivalent to 1.1% of the 2018 workforce in the North West. This is a similar level of recruitment requirement for the UK, which is 1.2% of the 2018 workforce.

## MAIN GROWTH DRIVERS/CONTRACTS

As the third largest of the regions and devolved nations, the North West's private housing market is likely to remain the biggest driver of overall construction output in the North West. Work commenced in September 2018 on the first of three towers at Vermont Construction's £250m Infinity development, which will be Liverpool's largest single housing project. It has recently been announced that around 2,000 residential units are to be built in Liverpool by 2020. Liverpool Council set up a new housing company, Foundations, at the beginning of 2018, which has a target of building 10,000 homes in the city. There are also a number of decent sized infrastructure projects underway and starting soon, including the five-year £300m Thirlmere Transfer West Cumbria Water Supplies Project, which is due to be in operation by March 2022.





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# YORKSHIRE AND HUMBER

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Although employment levels will remain steady, Yorkshire and Humber will still need to recruit over 10,000 new workers into construction to meet expected levels of work over the next five years.

## GROWTH RATE

Construction output in Yorkshire and Humber is forecast to grow at an average annual rate of 0.6% from 2019 to 2023, which is less than half of the UK growth rate of 1.3%. Work in the infrastructure (2.2%) and public-housing sectors (2.5%) are the most prominent drivers of growth, along with private housing (0.9%) and housing repair and maintenance (1.6%) work.

## JOB CREATION

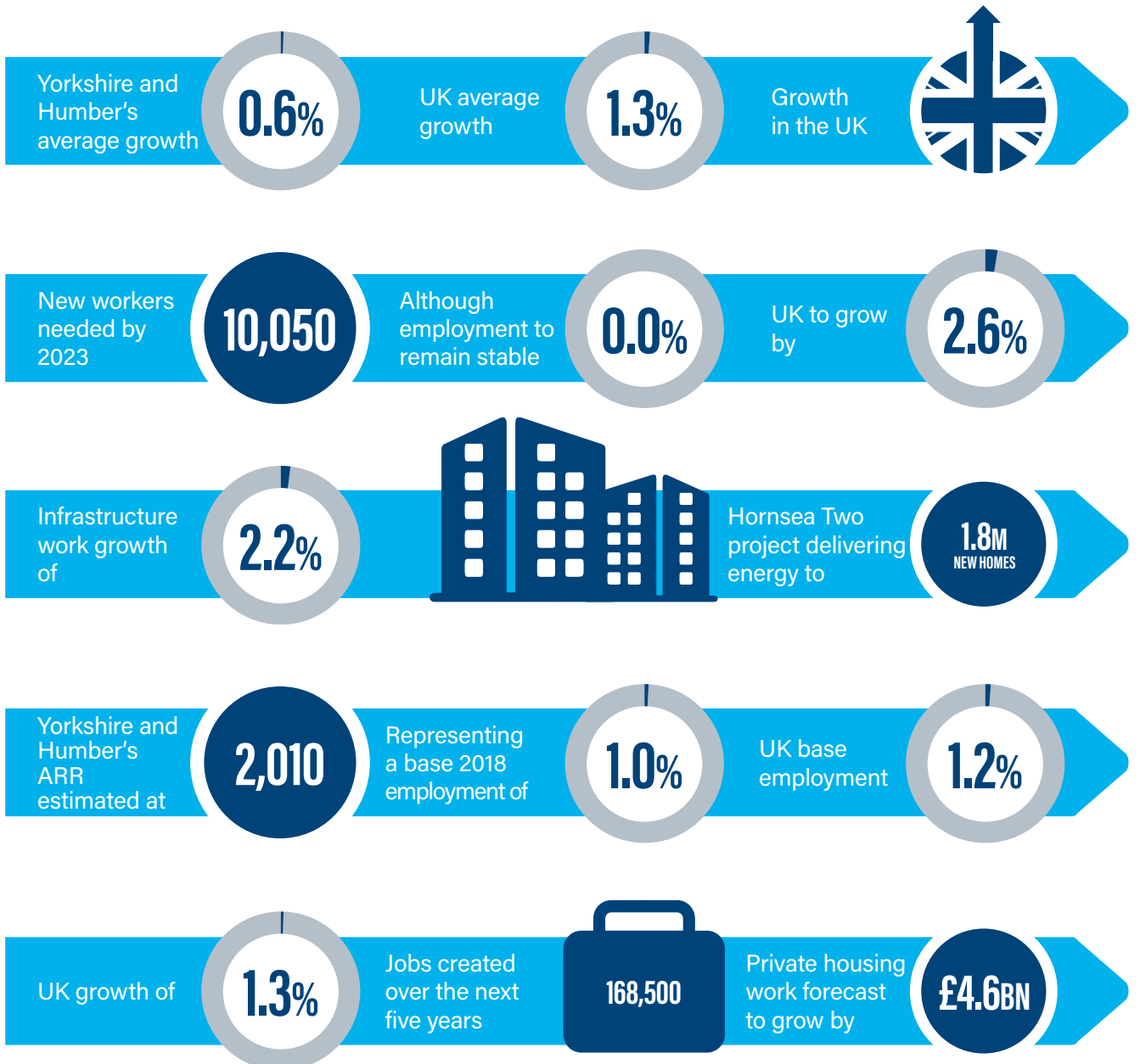
The low level of output growth in the region means that construction employment is forecast to remain steady at around 200,000 workers per year between 2019 and 2023. Along with other regions, Yorkshire and Humber is expected to see slightly more pressure for demand in managerial, professional and technical occupations.

## ANNUAL RECRUITMENT REQUIREMENT (ARR)

Although employment levels will remain steady, Yorkshire and Humber will still need to recruit new workers into construction to meet expected levels of work. The region has an estimated average ARR for 2,010 new workers each year, which is equivalent to 1.0% of the 2018 workforce.

## MAIN GROWTH DRIVERS/CONTRACTS

The infrastructure and housing sectors are expected to be the main drivers of growth in the region, with the latter being likely to account for 23% of all new work in the region this year, up from 19% in 2017. Plans have been revealed for 38 affordable homes to be built on a former North Lincolnshire Council depot site on Station Road in Scunthorpe. The homes will be a mixture of two, three and four bedrooms. This development would be part of a wider £25m project to build 240 new affordable homes. Onshore work for Hornsea Two wind farm is expected to start in March, with completion of the project due for 2022. This will be supported by a range of improvement works being carried out by Yorkshire Water, as well as rail and flood alleviation projects in Leeds.



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# EAST MIDLANDS

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The annual recruitment rate in the East Midlands of 1.6% per year, means an extra 14,550 workers are needed over the next five years.

## GROWTH RATE

The East Midlands is forecast to have an annual average growth rate of 1.2% for construction output between 2019-2023, which is just slightly lower than the UK average growth rate of 1.3%. Public sector housing (3.8%) and Commercial (2.6%) work are set to show the growth rates in the region over the next five years.

## JOB CREATION

Construction employment in the region is forecast to grow at an average rate of 0.1% per year, rising from just under 173,000 workers at the end of 2018 to over 174,000 by 2023. Growth is expected to be strongest for professional occupations such as civil engineers and surveyors.

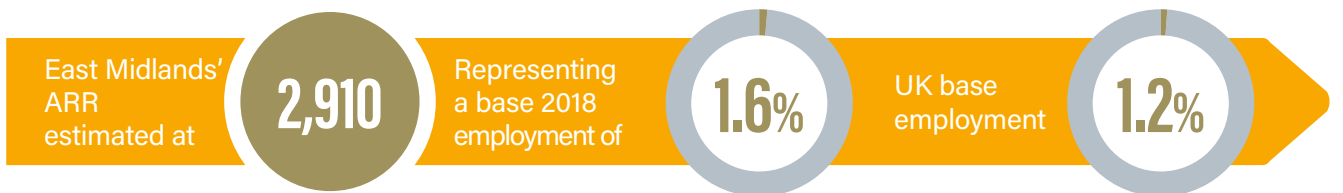
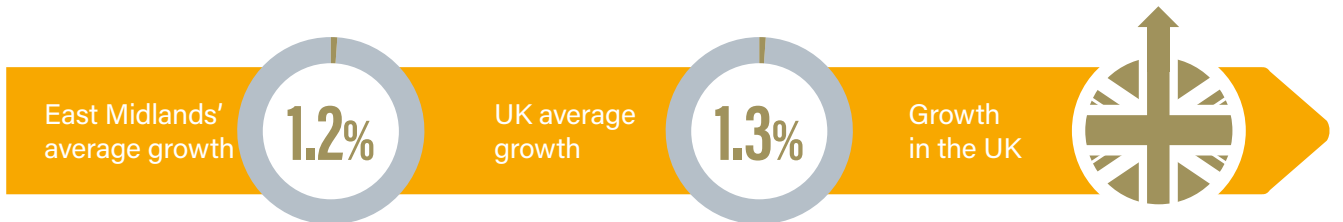
## ANNUAL RECRUITMENT REQUIREMENT (ARR)

The average Annual Recruitment Requirement (ARR) in the East Midlands for an extra 2,910 workers each year is equivalent to 1.6% of the base 2018 workforce. This is a stronger level than the UK figure of 1.2% of base workforce.

## MAIN GROWTH DRIVERS/CONTRACTS

Following an estimated 14% annual decline in 2018, commercial construction is expected to be the strongest sector in absolute terms, with 2.6% annual average growth over the five-year period to 2023. Preliminary work on the £135m, 12.5-acre extension to the retail park in Fosse Park Avenue, Leicester, commenced in 2018 and is due for completion by 2020. The long-awaited £86m redevelopment of Nottingham's intu Broadmarsh Centre will finally begin in the first quarter of 2019.

Other projects in the East Midlands are the onshore construction work for Triton Knoll windfarm which started in September 2018 and is scheduled to finish in 2021, at an estimated cost of £2bn. Main works for the £373m M1 junction 13 to 16 smart motorway scheme commenced in June 2018, with the project still scheduled for completion by March 2022. While the East Midlands will see less of an uplift from HS2 works than the West Midlands, it is nonetheless set to benefit throughout much of the current forecast period.



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# WEST MIDLANDS

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Has the highest growth rate in construction output across the 2019 to 2023 forecast, with annual average growth of 2.3% compared to the UK average of 1.3%. 19,100 new workers will be required.

## GROWTH RATE

The West Midlands has the highest forecasted growth rate in construction output across the 2019 to 2023 forecast, with annual average growth of 2.3% compared to the UK average of 1.3%. This growth is driven by work in the infrastructure sector (10.6%) from projects such as HS2 and preparations for the 2022 Commonwealth Games.

## JOB CREATION

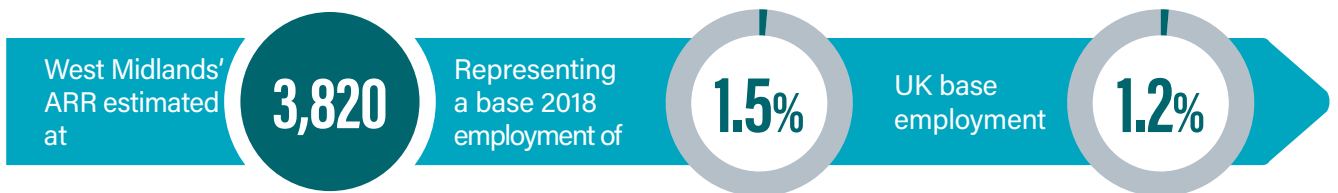
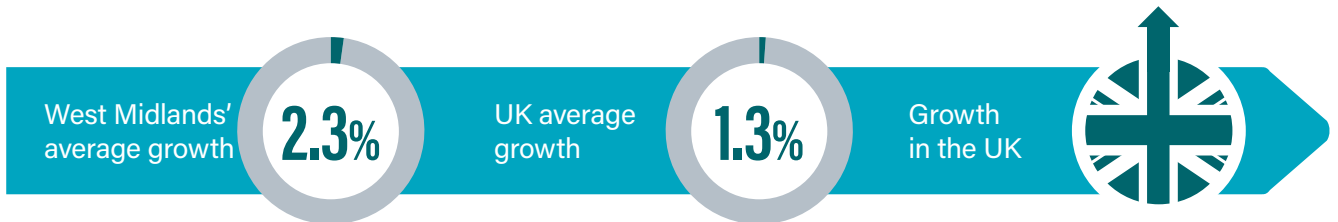
The level of output growth in the West Midlands gives an average annual increase of 1.1% in the construction workforce, which is more than double the UK figure of 0.5% and only just behind the South West of England, which has 1.2%. This means that the workforce of just over 245,000 at the end of 2018 will increase to nearly 259,000 by end of 2023.

## ANNUAL RECRUITMENT REQUIREMENT (ARR)

The region has an annual average recruitment requirement of 1.5%, based on 2018 employment levels, which is higher than the UK figure (1.2%). This means the West Midlands will need to recruit an extra 3,820 new workers each year to deliver the expected work output.

## MAIN GROWTH DRIVERS/CONTRACTS

An anticipated 10.6% annual average rise in infrastructure output is likely to be the single largest driver of overall expansion in the West Midlands, supported by ramping up of works on the HS2 scheme, preparations for the Commonwealth Games and a range of works to the M6 motorway. Housing output should also hold up well, with £350m worth of works on the Commonwealth Games athletes' village, including work carried out after the Games to convert the accommodation into a mixture of homes for sale and market rent, as well as for social and affordable rent. The Government has also extended the Right to Buy programme to social housing tenants under a pilot launched last summer. The Midlands Voluntary Right to Buy pilot has been given £200m of funding. Money from the discounted sales will then be used to fund replacement homes, the Government has said.



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# EAST OF ENGLAND

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Although growth is strongest for public sector work, private housing output is the largest contributor to construction work with over £3bn of output in 2018. 24,450 new workers will be needed in East of England from 2019-23.

## GROWTH RATE

With an annual average growth rate of 1.2% for construction output between 2019-2023, the East of England is similar to the forecasted UK average growth rate of 1.3%. Public sector housing and non-housing work show the strongest growth rates with 3.7% for housing and 3.6% for non-housing work.

## JOB CREATION

Construction employment in the region is also forecast to grow at an average rate of 0.4% per year, rising from nearly 245,000 workers at the end of 2018 to nearly 250,000 by 2023. Growth is expected to be strongest for managerial, professional and technical occupations.

## ANNUAL RECRUITMENT REQUIREMENT (ARR)

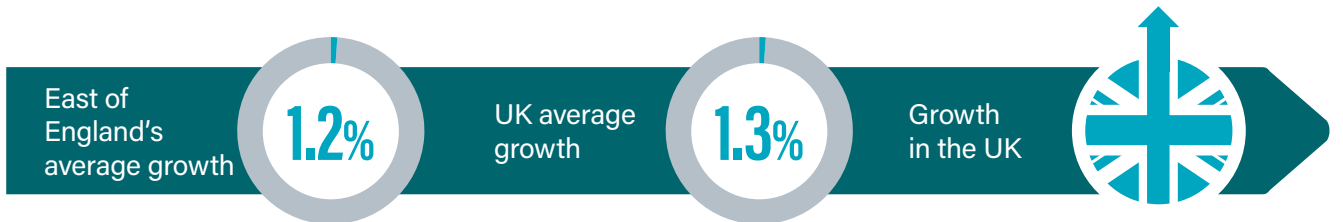
The average Annual Recruitment Requirement (ARR) in the East of England is forecast to be 2.0% of the base 2018 workforce, stronger than the UK figure of 1.2%. This means the region will be looking for an extra 4,910 workers each year.

## MAIN GROWTH DRIVERS/CONTRACTS

For new work, although growth is strongest for public sector work, private housing output is the largest contributor to construction work with over £3bn of output in 2018. With an annual average growth rate of 1.4% over 2019-2023, it will continue to be a very important sector for the East of England.

Significant projects in the region are the University of Cambridge's £1bn North West Cambridge development following completion of phase one in 2017, with completion scheduled for 2027, as well as the £1bn Beaulieu Park extension in Essex over a similar timeframe. Work also commenced recently on the £1bn Purfleet regeneration scheme. Construction, which will include around 2,800 new homes, will take place in phases, with the first phase being completed by 2021 and the whole development finished by 2034. In terms of other major projects, preliminary on-shore cable work to connect ScottishPower Renewables' £2.5bn East Anglia One windfarm to the grid is underway, with a scheduled completion date of 2020. The £1.5bn A14 Huntingdon to Cambridge upgrade also remains on track for completion by the end of 2020.





# GREATER LONDON

Is projected to see growth averaging 2.1% over the 2019 -2023 period, driven by infrastructure work (4.8%) on HS2 and the Thames Tideway, and strong housing growth (4.4%). 17,800 new workers will be needed.

## GROWTH RATE

Greater London is projected to see growth averaging 2.1% over the 2019-2023 period, driven by infrastructure work (4.8%) on HS2 and the Thames Tideway, and strong housing growth (4.4%). Although there is some current weakness for house prices in the region, housing growth may be strongest in the rental sector given that house prices in London continue to price many out of the market. The Mayor of London recently pledged £288m to four housing associations to help build an extra 4,705 affordable homes across the capital by March 2022, part of the initiative to meet a target of 116,000 new affordable homes in the next four years.

## JOB CREATION

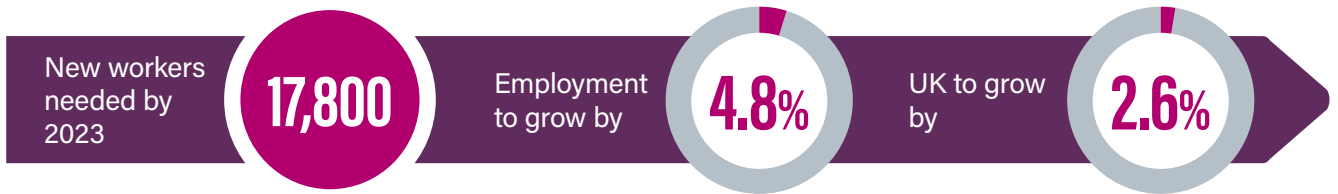
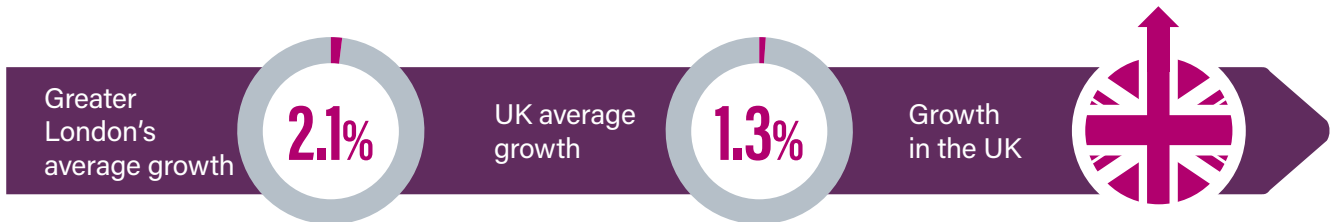
Construction employment in the region is forecast to grow at an average rate of 0.9% per year, rising from just over 432,000 workers at the end of 2018 to nearly 453,000 by 2023. Growth is expected to be strongest for managerial, professional and technical occupations, although skilled trades such as civil engineering operatives, scaffolders and plant operators will also be in demand.

## ANNUAL RECRUITMENT REQUIREMENT (ARR)

The average ARR in Greater London for an extra 3,560 workers each year is equivalent to 0.9% of the base 2018 workforce. This is a lower than the UK figure of 1.2% of base workforce as London draws workers in from surrounding regions like the East of England and the South East.

## MAIN GROWTH DRIVERS/CONTRACTS

While the infrastructure sector is still expected to post the greatest annual average growth in percentage terms, the much larger private housing sector is expected to make the greatest absolute contribution to overall expansion, with 4.5% annual average growth paving the way for it to become the largest sector in the region by 2023. Multiplex has won a project to build the Aykon London One residential tower in Nine Elms, at an estimated cost of £240m and expected completion by 2020. Balfour Beatty has similarly won a £200m contract to deliver a luxury residential project in Mayfair that is scheduled for an end-2020 finish. Transport for London's (TfL) latest business plan outlines a number of projects, including the winding down of expenditure on Crossrail and the £1bn Silvertown Tunnel project, which is due for completion by 2024. Construction work is set to start on the £1.4bn expansion of the Brent Cross shopping centre in early 2019. Work is also continuing on Google's £1bn London headquarters which is due for completion in 2021.



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# SOUTH EAST

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Growth of 1.1% per year in the South East will be mainly driven by private housing (3.5%) with public housing (1.9%) also set to grow. 13,200 new workers will be needed from 2019-23.

## GROWTH RATE

The forecast is for construction output growth in the South East to grow at an average annual rate of 1.1% from 2019 to 2023, only slightly lower than the UK growth rate of 1.3%. Growth in the region will be mainly driven by private housing (3.5%) with public housing (1.9%) also set to grow.

## JOB CREATION

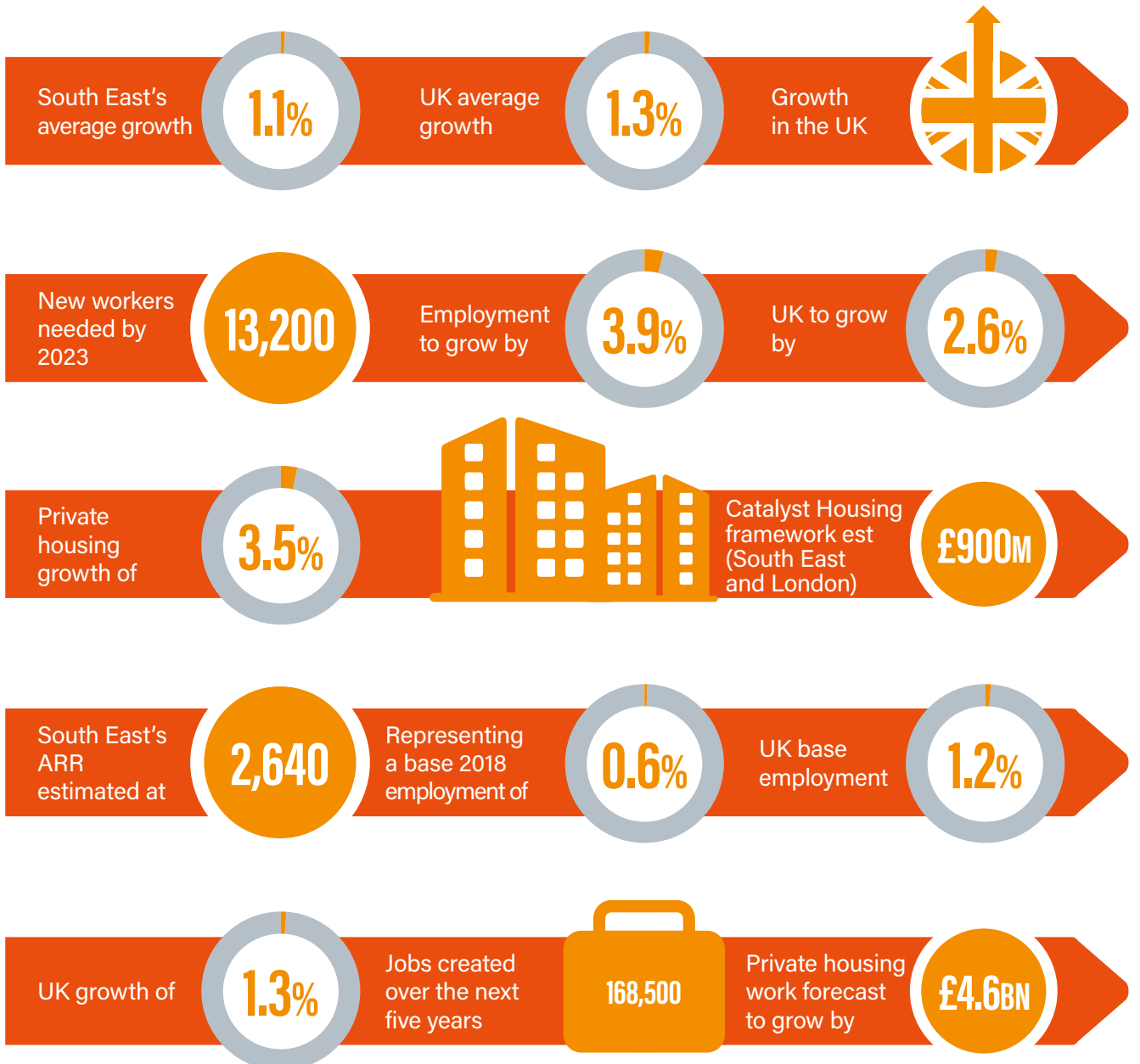
With output growing, the construction workforce in the South East is also set to grow with an average annual increase of 0.8%. This means that the workforce over 413,000 at the end of 2018 is set to increase to nearly 429,500 by the end of 2023. This growth is spread across a range of managerial, professional, technical and skilled trade occupations.

## ANNUAL RECRUITMENT REQUIREMENT (ARR)

This growth means the sector will need to recruit new workers, with the South East having an estimated average ARR for 2,640 new workers each year. This is equivalent to 0.6% of the base 2018 workforce.

## MAIN GROWTH DRIVERS/CONTRACTS

The South East's private housing sector is expected to see the strongest growth each year to 2023, averaging 3.5% per annum. Clarion has started the search for three contractors to take up space on its new £1.8bn framework, of which £600m has been allocated to London and the South East. Catalyst Housing has similarly awarded slots on an imminent four-year framework, worth up to £900m for 800 homes a year across London and the South East. Early reports suggest that £7bn of government investment in five housing programmes across England over the next five years is skewed in favour of the South East. Phase one of the East-West Rail project, worth £402m, has been completed, with work on phase two planned to start by September 2019. Completion is expected by 2023. Work on Woking town centre's £500m Victoria Square development, which includes apartments and a landmark retail centre, is also taking shape and on track for phased completion in 2020.



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# SOUTH WEST

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The South West is one of the best performing areas of the UK with an extra 27,200 new workers needed between 2019 and 2023.

## GROWTH RATE

With an annual average growth rate of 2.2% for construction output, the South West is one of the best performing areas of the UK between 2019 and 2023. The key sector for growth is infrastructure work, with Hinkley Point C nuclear new build helping to drive growth to an annual average rate of nearly 9% per year.

## JOB CREATION

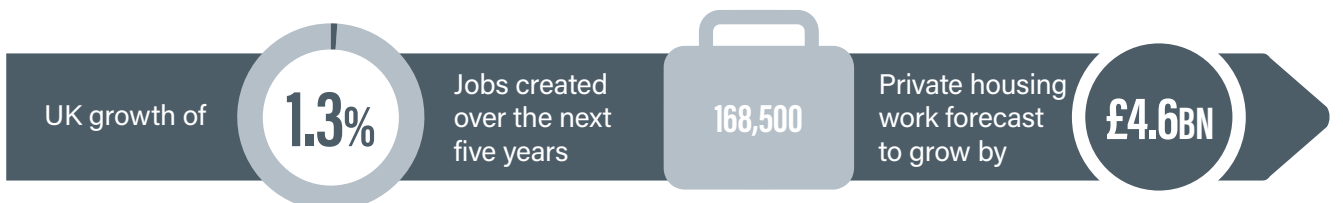
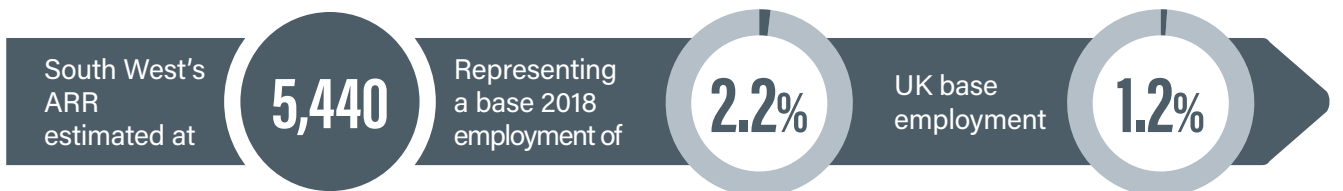
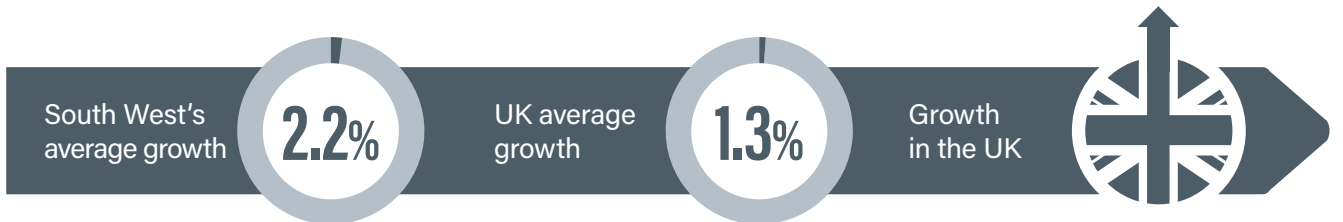
With strong output growth, the construction workforce in the South West is also set to grow strongly with an average annual increase of 1.2%, which is the highest level across all regions and nations. This means that the workforce over 238,000 at the end of 2018 is set to increase to more than 252,000 by the end of 2023. This growth is spread across a range of managerial, professional, technical and skilled trade occupations.

## ANNUAL RECRUITMENT REQUIREMENT (ARR)

The level of workforce growth means the South West also has the highest level of annual average recruitment required at 2.2% per year, based on 2018 employment levels. This is noticeably higher than the UK figure of 1.2% per year and means the region will need to recruit an extra 5,440 new workers each year to deliver the expected work output.

## MAIN GROWTH DRIVERS/CONTRACTS

Infrastructure output is likely to remain the key driving force for expansion in the region, largely owing to work on Hinkley Point C nuclear power plant. Two years after construction began, work on Hinkley Point C is largely still on track – with a major milestone in the form of a 4,500-tonne concrete platform supporting the reactor buildings due for completion in 2019. The facility is on track to become fully operational in 2025. Construction work on Viridor's Avonmouth Resource Recovery Centre (RRC) started in early 2018 after laying the foundations the previous summer. The £252m project, which is due to be completed in the summer of 2020, forms part of a £1.5bn investment in next-generation recycling and recovery facilities by Viridor's parent company, South West-based Pennon Group. According to the National Housing Federation, in the next three years housing associations in Cornwall will plan to spend more than £556m on development projects, building 3,772 new homes in the process.





# 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 reports at a UK, national and regional level.

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

**NOTES** has some further information relating to the data sources used for the various charts and tables. This section also outlines what is meant by the term 'footprint', when talking about the areas of responsibility that lie with a Sector Skills Council (SSC) or Sector Bodies.

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

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

# CSN METHODOLOGY

## BACKGROUND

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

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

Observatory groups currently meet twice a year and consist of key regional stakeholders invited from industry, Government, education and sector bodies, all of whom contribute their local industry knowledge and views on training, skills, recruitment, qualifications and policy. The National Group also includes representatives from industry, Government, education and other SSCs and Sector Bodies. This Group convenes twice a year and sets the national scene, effectively forming a backdrop for the Observatories.

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

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

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

## THE MODEL APPROACH

The model approach relies on a combination of primary research and views from the CSN to facilitate it. National data is used as the basis for the assumptions that augment the models, which are then adjusted with the assistance of the Observatories and National Group. Each English region, Wales, Scotland and Northern Ireland has a separate model (although all models are interrelated due to labour

movements) and, in addition, there is one national model that acts as a constraint to the individual models and enables best use to be made of the most robust data (which is available at the national level).

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

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



### THE MODEL APPROACH CONT'D

new employees that would need to be recruited into construction each year in order to realise forecast output.

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

### THE KEY LEAKAGES (OUTFLOWS) THAT NEED TO BE CONSIDERED ARE:

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

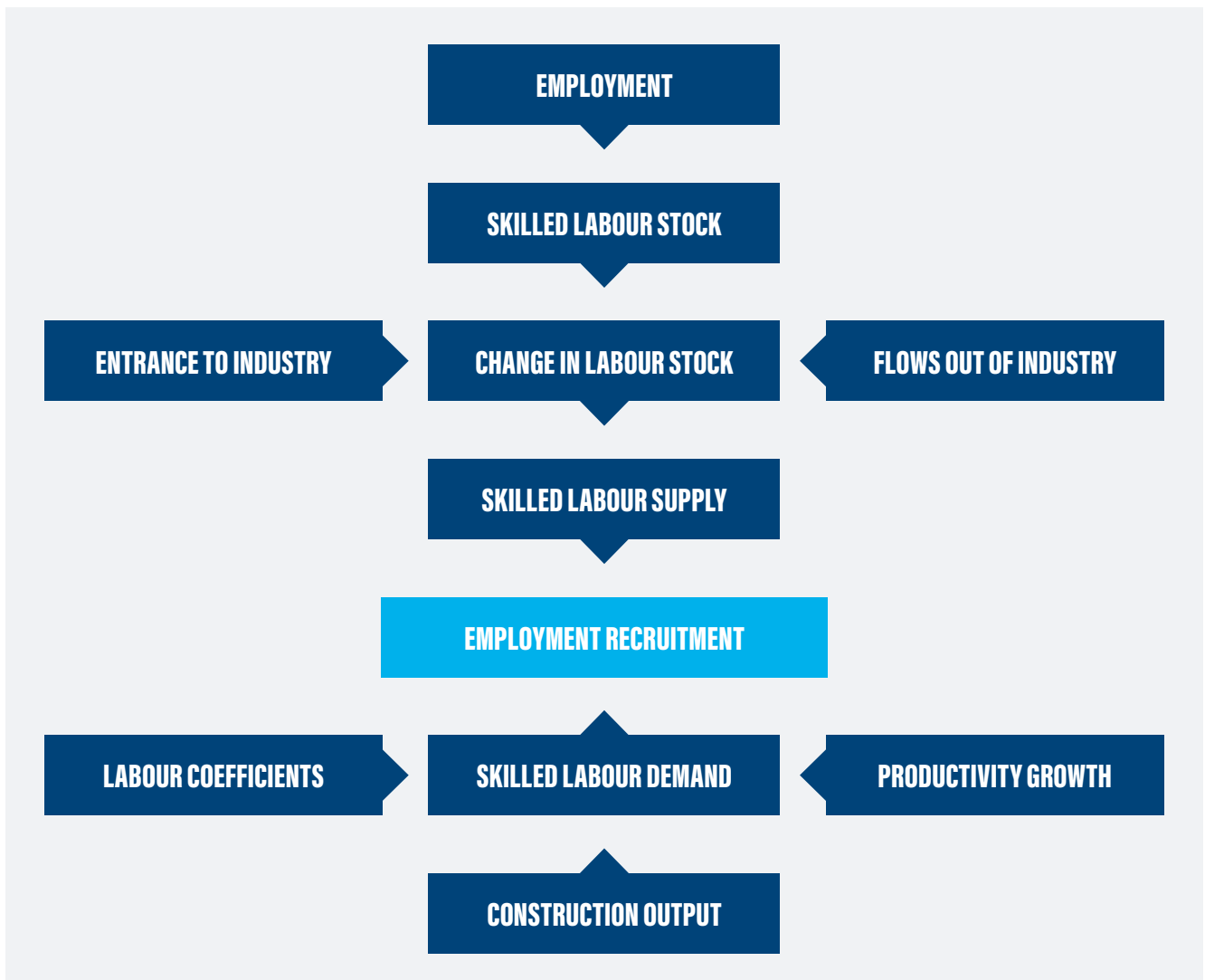
**The main reason for outflow is likely to be transfer to other industries.**

### FLOWS INTO THE LABOUR MARKET INCLUDE:

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

**The most significant inflow is likely to be from other industries.**

A summary of the model is shown in the flowchart below.



## APPENDIX

# 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.

## GROSS VALUE ADDED (GVA)

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.

## GROSS DOMESTIC PRODUCT (GDP)

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.

## 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.

## LABOUR FORCE SURVEY (LFS)

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).

## LABOUR MARKET INTELLIGENCE (LMI)

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.

## OFFICE FOR NATIONAL STATISTICS (ONS)

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

- 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 SIC41-43 and SIC41-43, 71.1 and 74.9. The total for SIC41-43 covers the first 24 occupational groups on the relevant tables and excludes civil engineers, other construction professionals and technical staff, architects and surveyors. The total for SIC41-43, 71.1 and 74.9 includes all occupations.

## FOOTPRINTS FOR THE BUILT ENVIRONMENT SECTOR

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

The table summarises the SIC codes (2007) covered by:

CITB AND CITB NORTHERN IRELAND	
SIC CODE	DESCRIPTION
41.1	Development of building projects
41.2	Construction of residential and non-residential buildings
42.1	Construction of roads and railways
42.2	Construction of utility projects
42.9	Construction of other civil engineering projects
43.1	Demolition and site preparation
43.3	Building completion and finishing
43.9	Other specialised construction activities nec
71.1	Architectural and engineering activities and related technical consultancy

The CSN's current baseline forecast assumes that a deal between the UK and EU will be agreed within a four year time horizon, with some form of trade access to the single market. As it is unlikely that the trade terms will be as favourable as the current situation, the forecast includes a small downgrade to the UK's long term export and investment projections, compared to the pre-Brexit vote baseline. No adjustments have been made to underlying population projections in the base case as it is too early to assess any potential slowdown in EU migration.



# DEFINITIONS

## Types and examples of construction work examples

### **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**

Water reservoirs, purification plants, dams, water works, pumping stations, water mains, hydraulic works etc.

#### **SEWERAGE**

Sewage disposal works, laying of sewers and surface drains.

#### **ELECTRICITY**

Building and civil engineering work for electrical undertakings, such as power stations, dams and other works on hydroelectric schemes, onshore wind farms and decommissioning of nuclear power stations.

#### **GAS, COMMUNICATIONS, AIR TRANSPORT**

Gas works, gas mains and gas storage; post offices, sorting offices, telephone exchanges, switching centres etc., air terminals, runways, hangars, reception halls, radar installations.

#### **RAILWAYS**

Permanent way, tunnels, bridges, cuttings, stations, engine sheds etc., signalling and other control systems and electrification of both surface and underground railways.

### **HARBOURS**

All works and buildings directly connected with harbours, wharves, docks, piers, jetties, canals and waterways, sea walls, embankments and water defences.

### **ROADS**

Roads, pavements, bridges, footpaths, lighting, tunnels, flyovers, fencing etc.

### **PUBLIC NON-RESIDENTIAL CONSTRUCTION<sup>1</sup>**

#### **FACTORIES AND WAREHOUSES**

Publicly owned factories, warehouses, skill centres.

#### **OIL, STEEL, COAL**

Now restricted to remedial works for public sector residual bodies.

#### **SCHOOLS, COLLEGES, UNIVERSITIES**

State schools and colleges (including technical colleges and institutes of agriculture); universities including halls of residence, research establishments etc.

#### **HEALTH**

Hospitals including medical schools, clinics, welfare centres, adult training centres.

#### **OFFICES**

Local and central Government offices, including town halls, offices for all public bodies except the armed services, police headquarters.

#### **ENTERTAINMENT**

Theatres, restaurants, public swimming baths, caravan sites at holiday resorts, works and buildings at sports grounds, stadiums, racecourses etc. owned by local authorities or other public bodies.

#### **GARAGES**

Buildings for storage, repair and maintenance of road vehicles, transport workshops, bus depots, road goods transport depots and car parks.

### **SHOPS**

Municipal shopping developments for which the contract has been let by a Local Authority.

### **AGRICULTURE**

Buildings and work on publicly financed horticultural establishments; fen drainage and agricultural drainage, veterinary clinics.

### **MISCELLANEOUS**

All work not clearly covered by any other headings, such as fire stations, police stations, prisons, reformatories, remand homes, civil defence work, UK Atomic Energy Authority works, council depots, museums, libraries.

### **PRIVATE INDUSTRIAL WORK**

Factories, warehouses, wholesale depots, all other works and buildings for the purpose of industrial production or processing, oil refineries, pipelines and terminals, concrete fixed leg oil production platforms (not rigs); private steel work; all new coal mine construction such as sinking shafts, tunnelling, etc.

### **PRIVATE COMMERCIAL WORK<sup>1</sup>**

#### **SCHOOLS AND UNIVERSITIES**

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

#### **HEALTH**

Private hospitals, nursing homes, clinics.

#### **OFFICES**

Office buildings, banks.

#### **ENTERTAINMENT**

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

**GARAGES**

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

**SHOPS**

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

**AGRICULTURE**

All buildings and work on farms, horticultural establishments.

**MISCELLANEOUS**

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

**NEW WORK**

**NEW HOUSING**

Construction of new houses, flats, bungalows only.

**ALL OTHER TYPES OF WORK**

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

**REPAIR AND MAINTENANCE**

**HOUSING**

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

**ALL OTHER SECTORS**

Repair and maintenance work of all types, including planned and contractual maintenance.<sup>3</sup>



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.

## APPENDIX

# 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	1131
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
<b>CONSTRUCTION TRADES SUPERVISORS</b>	
Skilled metal, electrical and electronic trades supervisors	5250
Construction and building trades supervisors	5330
<b>WOOD TRADES AND INTERIOR FIT-OUT</b>	
Carpenters and joiners	5315
Paper and wood machine operatives	8121
Furniture makers and other craft woodworkers	5442
Construction and building trades nec* (25%)	5319
<b>BRICKLAYERS</b>	
Bricklayers and masons	5312
<b>BUILDING ENVELOPE SPECIALISTS</b>	
Construction and building trades nec* (50%)	5319
<b>PAINTERS AND DECORATORS</b>	
Painters and decorators	5323
Construction and building trades nec* (5%)	5319
<b>PLASTERERS</b>	
Plasterers	5321
<b>ROOFERS</b>	
Roofers, roof tilers and slaters	5313
<b>FLOORERS</b>	
Floorers and wall tilers	5322
<b>GLAZIERS</b>	
Glaziers, window fabricators and fitters	5316
Construction and building trades nec* (5%)	5319
<b>SPECIALIST BUILDING OPERATIVES NOT ELSEWHERE CLASSIFIED (NEC*)</b>	
Construction operatives nec* (100%)	8149
Construction and building trades nec* (5%)	5319
Industrial cleaning process occupations	9132
Other skilled trades nec*	5449

<b>SCAFFOLDERS</b>	
Scaffolders, staggers and riggers	8141
<b>PLANT OPERATIVES</b>	
Crane drivers	8221
Plant and machine operatives nec*	8129
Fork-lift truck drivers	8222
Mobile machine drivers and operatives nec*	8229
<b>PLANT MECHANICS/FITTERS</b>	
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
<b>STEEL ERECTORS/STRUCTURAL FABRICATION</b>	
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
<b>LABOURERS NEC*</b>	
Elementary construction occupations (100%)	9120
<b>ELECTRICAL TRADES AND INSTALLATION</b>	
Electricians and electrical fitters	5241
Electrical and electronic trades nec*	5249
Telecommunications engineers	5242
<b>PLUMBING AND HEATING, VENTILATION, AND AIR CONDITIONING TRADES</b>	
Plumbers and heating and ventilating engineers	5314
Pipe fitters	5216
Construction and building trades nec* (5%)	5319
Air-conditioning and refrigeration engineers	5225
<b>LOGISTICS</b>	
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
<b>CIVIL ENGINEERING OPERATIVES NOT ELSEWHERE CLASSIFIED (NEC*)</b>	
Road construction operatives	8142
Rail construction and maintenance operatives	8143
Quarry workers and related operatives	8123

## APPENDIX

**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 nec*	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
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**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 nec*	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
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**SURVEYORS**

Quantity surveyors	2433
Chartered surveyors	2434

**\*NOT ELSEWHERE CLASSIFIED**





NOTES





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## CITB RESEARCH

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