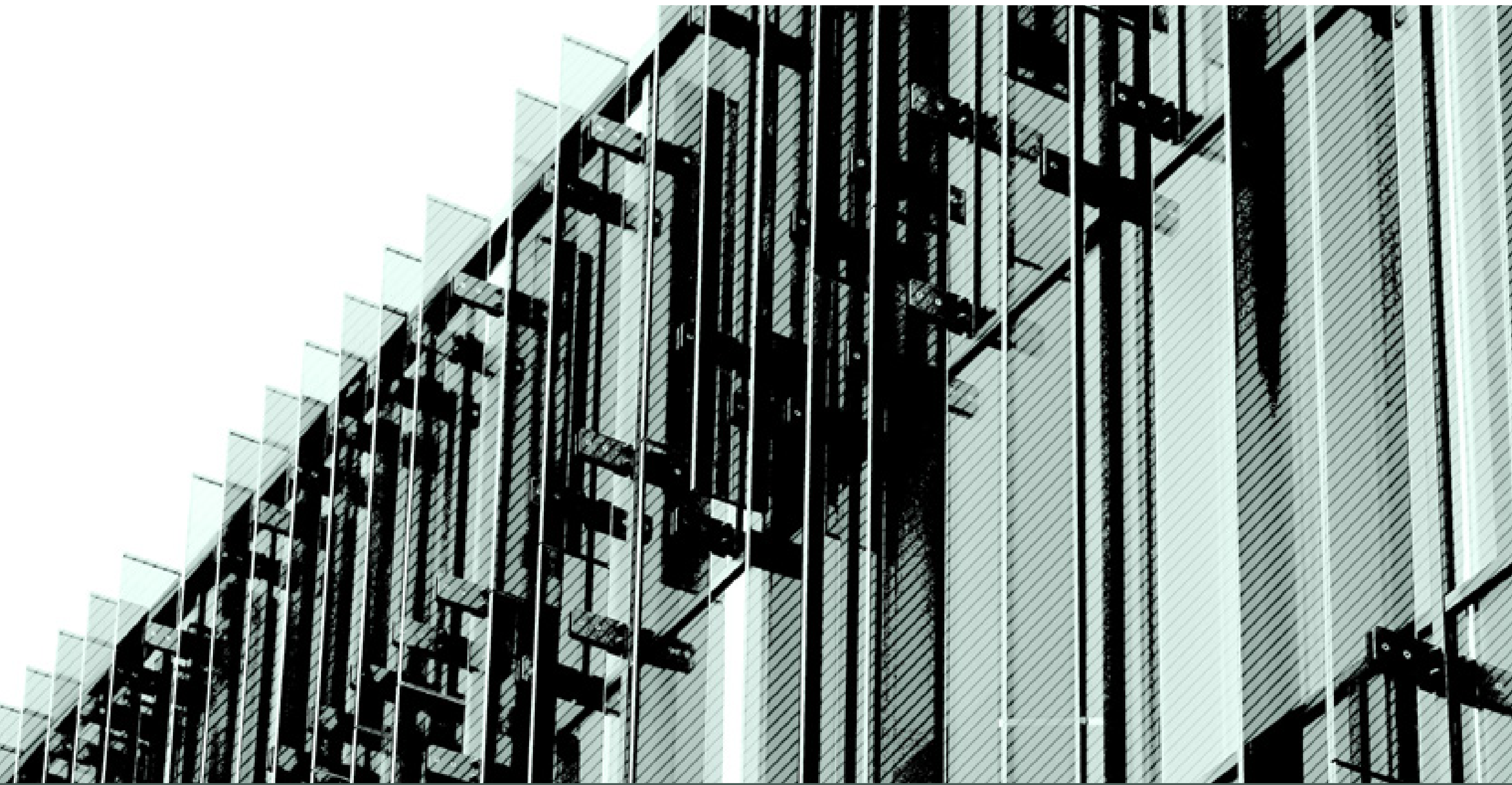
In association with

INDUSTRY INSIGHTS

Construction Skills Network
Forecasts 2017–2021



NORTHERN IRELAND

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 CITB NI
As the Industry Training Board and a partner in ConstructionSkills, the Sector Skills Council for the UK Construction industry, CITB NI is funded by a statutory levy from registered in scope employers. The organisation provides a range of services to the industry which incorporates identifying training needs, encouraging and advising on training, provision of training grants and research and policy development.

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 – NORTHERN IRELAND

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

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

6.1%

Employment is forecast to grow by

0.4%

a year on average

Northern Ireland has an ARR of

710

KEY FINDINGS

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

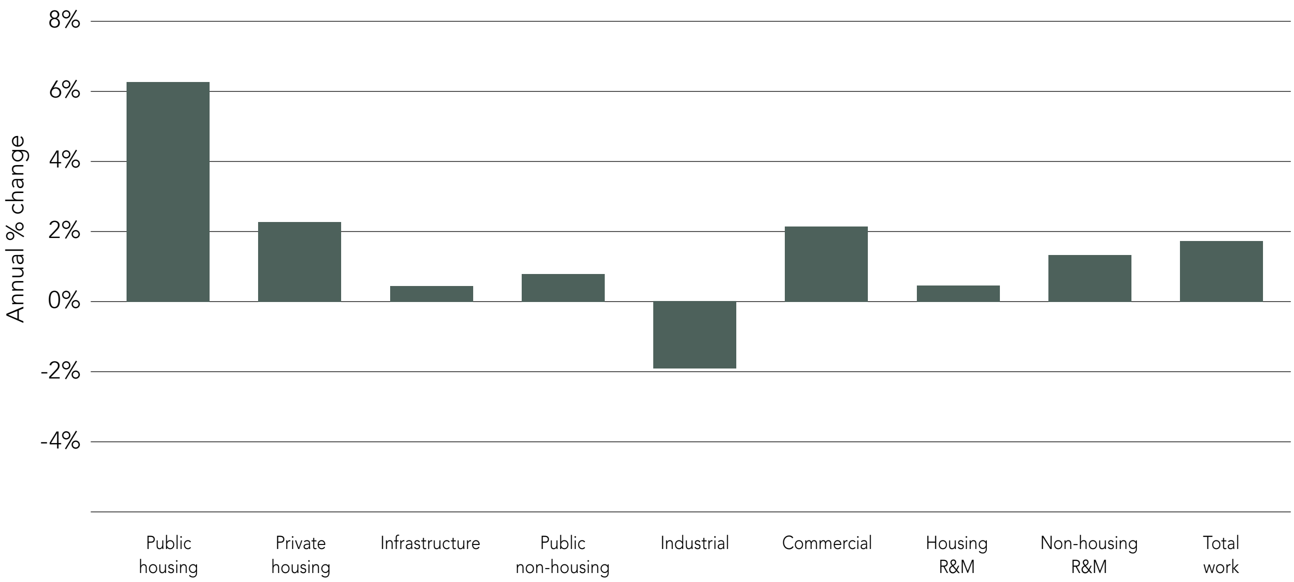
The industry is expected to return to growth in 2017 and expand by an annual average of 1.6% over the five years to 2021, close to the UK rate of 1.7%. These are lower growth rates for both the devolved nation and the UK than those predicted last year for the 2016 to 2020 period as the events of 2016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

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

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

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

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017-2021 – NORTHERN IRELAND



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.

Northern Ireland is projected to see annual average output growth of 1.6% over the 2017 to 2021 period, roughly in line with the UK rate of 1.7%.

THE OUTLOOK FOR CONSTRUCTION IN NORTHERN IRELAND

CONSTRUCTION OUTPUT IN NORTHERN IRELAND – OVERVIEW

Northern Ireland's construction industry suffered the most in the 'great recession' and its aftermath, with output falling by close to 40% in real terms between 2008 and 2013. A modest recovery started in 2014, which strengthened in 2015, largely driven by the housing and public non-housing sectors. However, output in the devolved nation, at £2.41bn, remained a third below its 2007 peak.

INDUSTRY STRUCTURE

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

The Northern Ireland construction industry remains much more heavily skewed towards new work than the UK as a whole (73% vs 64%) with the housing R&M sector much less important in the former than in the latter (10% vs 18%). Within new work there are also significant differences between Northern Ireland and the UK, with public housing (7% vs 4%), and public non-housing (20% vs 7%) taking much bigger shares of output in the former than in the latter, but the situation reversed for the commercial sector (8% vs 18%). The relative size of the infrastructure sector has come more in line with the UK average in 2015 than it was in 2014.

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.

ECONOMIC STRUCTURE

The Northern Ireland economy is still heavily skewed towards the public services and manufacturing sectors, which combined accounted for around 42% of economic output in 2015, compared with less than 28% across the UK as a whole.

Public services' share, at just below 28%, does represent a reduction from the sector's 35% share in 2000 and manufacturing's share has also fallen over the same period, but less so than in some other parts of the UK.

The second largest sector in Northern Ireland's economy is the professional and other private services one, which has seen its share of total gross value added (GVA) grow to 19.5% in 2015, although this was still well below its 27.6% share across the UK as a whole. One of the most noteworthy growth rates since the start of the millennium has been achieved by the information and communication sector, at 3.3% a year on average. However, this still underperformed the UK rate of 4% a year.

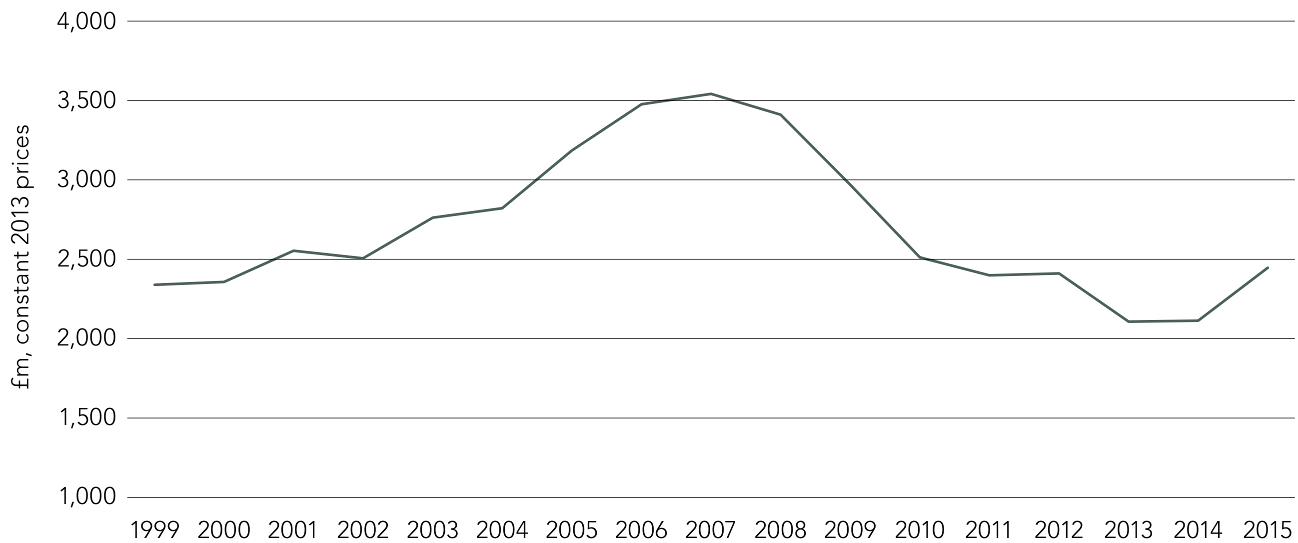
CONSTRUCTION INDUSTRY STRUCTURE 2015 – UK VS NORTHERN IRELAND

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

Source: ONS, Experian.

UK | Northern Ireland

CONSTRUCTION OUTPUT 1999–2015 – NORTHERN IRELAND



Source: ONS.
Ref: CSN Explained.

ECONOMIC STRUCTURE – NORTHERN IRELAND (£ BILLION, 2012 PRICES)

	Actual	Forecast (Annual % change, real terms)					
	2015	2016	2017	2018	2019	2020	2021
Public Services	9.2	0.7	0.3	0.6	1.4	2.1	2.2
Professional & Other Private Services	6.5	2.5	1.5	1.3	1.7	1.9	2.0
Wholesale & Retail	4.8	4.0	1.2	1.3	1.8	2.1	2.1
Manufacturing	4.6	-0.2	0.3	1.4	1.2	1.0	1.0
Finance & Insurance	1.2	1.0	0.7	0.6	1.2	1.4	2.1
Total Gross Value Added (GVA)	**33.3**	**1.6**	**0.9**	**1.1**	**1.5**	**1.8**	**1.9**

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

FORWARD LOOKING ECONOMIC INDICATORS

GVA in Northern Ireland reached £33.3bn in 2012 prices in 2015, a rise of just 0.5% on the previous year. Growth in 2016 is estimated to have strengthened to 1.5% on the back of good performances in the information and communication (5.5%) and wholesale and retail (4%) sectors.

GVA growth in Northern Ireland is projected to average 1.4% between 2017 and 2021, less than the 1.8% expected across the UK as a whole. The lower growth rate in the devolved nation tends to be an inevitable consequence of its heavier reliance on slower growing sectors such as manufacturing and public services. The former is predicted to see annual average increases in output of 1% and the latter 1.3% while growth in most of the service sectors will be much nearer 2%.

However, growth across the UK is projected to be slower than predicted a year ago due to global uncertainties, not just as a result of the European Union referendum result in the UK, but also linked to the recent U.S. elections and continuing instability in the Middle East. These factors are expected to impact consumer spending and business investment. Real household disposable income growth in Northern Ireland is likely to turn negative this year under pressure from higher inflation and remain lower than in the recent past thereafter. This will impact household spending, which is projected to grow at around 1.4% a year on average in the 2017 to 2021 period, well down on the rates seen in 2015 and 2016.

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

Construction output data for Northern Ireland are published by the Department of the Economy and at the time of writing data was available for the first half of 2016, although unlike the English regions and other devolved nations, an estimate of output in constant prices is made. No new orders data are available for the devolved nation.

Construction output in the first half of 2016 totalled £1.26bn in 2013 prices, 5% up on the previous half-year and 2% higher than in the corresponding period of 2015. Growth has been strongest in the public housing and infrastructure sectors and only the public non-housing sector saw falls in the first half of last year against both halves of 2015. However, on an annualised basis output was only 1% higher in the second quarter of 2016 than at the end of 2015, and the second half of last year is expected to have been weaker than the first, producing a modest decline in activity over the year as a whole.

Looking ahead, the short-term forecast is reasonably buoyant, with annual average growth of a little over 3% projected for 2017 and 2018, driven in the main by good performances in the housing, infrastructure and public non-housing sectors.

According to the Northern Ireland Investment Strategy website there was around £290m of new social house building projects in procurement in the second half of last year and this should prompt good growth averaging nearly 9% a year in 2017 and 2018 in public housing output. Work has just started on an £8.5m social housing scheme in Larne Road, Ballymena, consisting of 74 new homes in total. The development is scheduled to complete in April 2018.

In the private housing sector work on the 1,000 home project at Rivenwood, Newtownards, is expected to have started towards the end of 2016, while the Lotus Group, which recently bought the Junction One retail park in Antrim, is now planning to build up to 100 new homes next to the site in two phases, with the first, of 45 units, to start in early 2017, subject to planning permission. They have named the housing development Ferrard Meadow. The private housing sector should see annual average growth of close to 6% over the next couple of years.

The prospects for the infrastructure sector in the near term are also reasonably good with annual average growth of 4% forecast. Work is expected to have started on the Moneynick section of the A6 between Randalstown and Castedawson towards the end of 2016. The scheme consists of 14km of new dual carriageway and is estimated to cost £130m. However, the controversial £130m York Street interchange project in Belfast was put on hold earlier in 2016 amid concerns that EU funding for the scheme may not now be available. It has since been subject to an 'intention to proceed' notice from the infrastructure minister, but the project effectively remains in limbo until the required finance is secured.

Northern Ireland will share in £35m from the School Enhancement Programme (SEP) to fund refurbishment and extension works beginning in the 2016/17 financial year. The funds have become available due to an increase of nearly a third in the Department of Education's capital budget for 2016/17. According to the March 2016 Infrastructure Investment Pipeline, there are between £213m and £272m of education projects due to enter procurement during 2016/17, with a further £87m to £107m to reach the same stage in 2017/18 and around £80m in 2018/19. The largest projects in the pipeline are the construction of the new regional colleges across the devolved nation, the biggest of which will be the £45m to £50m campus at Ballymena.

Enabling works have begun on the acute services block for Ulster Hospital with the contract for main works on the £90m to £100m project expected to be procured in 2017/18. Phase 5.1 of the Altnagelvin Hospital redevelopment is now on site, with a further £30m to £35m of works for additional operating theatres scheduled to be procured this year.

All the above suggests that there should be some growth in public non-housing output over the next couple of years, put at 3% per annum on average.

The two sectors not expected to do so well in the short term are the industrial and commercial ones, both with almost flat profiles of output on average over the next two years. The former is likely to struggle with a squeeze on domestic demand in 2017 due to the likelihood that growth in real disposable incomes will turn negative for a short period. This is likely to more than offset any benefit to manufacturers from higher exports due to weak sterling.

In the commercial construction sector there may be a small hit from the expected reductions in business investment over the next two years, causing a bit of a hiatus in projects being brought forward. However, there are now around 30 new hotel schemes in the pipeline, the bulk in Belfast, including the proposed Grand Central Hotel. Belfast is also suffering from a lack of Grade A office space, but with rents rising the prospects for new development have improved, despite the EU referendum vote. It is likely that the positive effects of this will be seen in the second half of the forecast period. A £20m extension to Newry shopping centre, The Quays, recently commenced due to a boom in cross-border shopping seemingly spurred by the EU referendum result.

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

Overall, the recovery in the Northern Ireland construction industry is expected to continue for most of the forecast period, with annual average growth projected at 1.6%, roughly in line with the UK average. On this prognosis output would reach £2.52bn (2013 prices) in 2021, 17% above its lowest point in 2013, but still nearly 30% below its peak of nearly £3.6bn in 2007.

However, output in the mid-2000s in the devolved nation was boosted by exceptionally high levels of private house building, which are unlikely to be replicated in the future. In crude terms at its peak in 2006, Northern Ireland was completing nearly 10 private housing units per 1,000 population compared with a UK rate of a little over three. This level of building was unsustainable in the long term and has fallen to 2.5 units completed per 1,000 population in 2015. It is expected to edge its way back towards the UK rate over the medium to long term, but it is highly unlikely ever to approach its 2006 peak again. Thus moderate growth, of around 2% a year is projected for the private housing sector over the five years to 2021.

The expectation is that construction will begin on the 165-acre Ballyclare site in County Antrim some time in the forecast period. Elsewhere in the province there are plans for 400 new homes outside Coleraine, 800 in Derry, 1,000 in Newtownards, and 550 in Bangor.

In the case of the public housing sector, the funding available to try and meet the target of 1,600 new homes built by housing associations is expected to boost activity, particularly in the first part of the forecast period, and drive growth of around 6% a year on average in the five years to 2021.

In the infrastructure sector, most of the growth is expected in the first three years of the forecast period, with declines in the final two years as some projects complete and activity peaks on others, giving an annual average growth rate of 0.5% overall.

In total some 30km of the A6 between Derry and Dungevin is due to be dualled over the next few years at a cost of between £350m and £400m, but there is likely to be little growth in output from this project post 2019.

One of the biggest infrastructure projects in the pipeline scheduled to start during the forecast period is a £280m power station for Belfast Harbour. Evermore Energy Limited is currently finalising the design and hopes to submit a planning application by the end of the year. If all goes well, construction is scheduled to start in mid-2018.

In the aftermath of the UK Budget, the Northern Ireland Education minister announced in March that 10 new primary school capital projects will now be taken forward during the term of the next Assembly, worth an estimated £40m in total. However, once these projects complete there is little in the pipeline of a similar size, except the main contract for the new regional children's hospital in Belfast, worth between £90m and £100m and due to enter procurement in 2018/19. Thus growth in public non-housing output is expected to slow markedly post 2018, giving an annual average rate of less than 1%.

The industrial construction sector in Northern Ireland is very small and thus marginal movements in output can give big changes in growth in percentage terms.

One of the biggest schemes in the pipeline in the sector is the £86m industrial park at Newtownabbey, being taken forward in part by funding from Invest NI. However, with growth in manufacturing output only expected to average 1% a year over the 2017 to 2021 period and that for the transport and storage sector to be around 1.8%, demand for new industrial premises is likely to be weak. Output in the sector is likely to subside over the forecast period at an annual average rate of close to 2%.

The prospects for the commercial construction sector are much better. Output in the sector is currently at historically low levels and given Belfast's increasing attractiveness as a tourist destination, considerable hotel and other leisure development is expected, as mentioned in the previous section. Some analysts also believe that Belfast could see a bit of an office building boom over the next few years, with a recent report from Savills indicating nine projects currently on site, 20 with planning approval and a further 18 at the planning or pre-planning stage.

Plans have been drawn up for 70,000 square feet of new office space on the site of the old Belfast Gasworks. Inislyn Ltd and Holywood firm Strategic Planning are taking forward the scheme, which includes the reconfiguration of an existing car park. Kilmona has been granted planning permission for its £55m Lanyon Central office development, which will sit next to Central Station in Belfast.

The R&M sectors tend to be less volatile than the new work ones as a certain level of activity needs to carry on regardless of economic circumstance or public policy – emergency repairs and routine and cyclical maintenance especially in the non-residential sectors that are public facing – e.g. retail and leisure. In the housing R&M sector it is the big ticket items, such as extensions and conversions, which are delayed or postponed when home owners face increased economic uncertainty, which they may well do over the next couple of years.

ECONOMIC INDICATORS – NORTHERN IRELAND (£ 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)	27.5	2.4	-0.5	1.2	1.4	1.9	2.1
Household spending (2012 prices)	29.1	2.4	1.1	0.5	1.4	1.9	2.1
Working age population (000s and as % of all)	1,160	62.8%	62.7%	62.6%	62.6%	62.9%	62.8%
House prices (£)	115,500	2.5	0.8	0.7	1.7	2.1	2.4
LFS unemployment (millions)	0.1	-0.3	11.3	2.7	-0.1	-0.6	1.5

Source: ONS, DCLG, Experian.

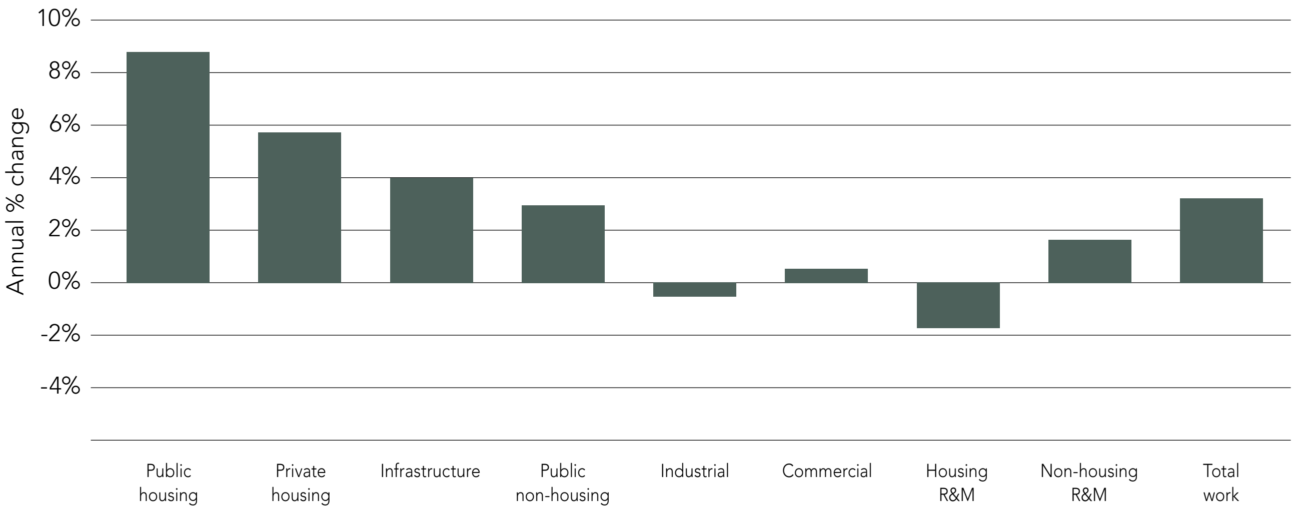
> Looking ahead, the short-term forecast is reasonably buoyant, with annual average growth of a little over 3% projected for 2017 and 2018, driven in the main by good performances in the housing, infrastructure and public non-housing sectors.

CONSTRUCTION OUTPUT – NORTHERN IRELAND (£ MILLION, 2013 PRICES)

	Actual	Forecast annual % change			Annual average
	2015	2016	2017	2018	2017-2018
Public housing	162	7%	8%	9%	8.8%
Private housing	441	8%	7%	5%	5.7%
Infrastructure	413	0%	6%	2%	4.0%
Public non-housing	478	-12%	-2%	9%	3.0%
Industrial	78	-26%	-8%	7%	-0.4%
Commercial	194	-4%	-2%	2%	0.4%
New work	**1,767**	**-2%**	**3%**	**5%**	**4.2%**
Housing R&M	237	-9%	-2%	-2%	-1.7%
Non-housing R&M	408	-4%	3%	0%	1.6%
Total R&M	**644**	**-6%**	**1%**	**-1%**	**0.4%**
Total work	**2,411**	**-3%**	**3%**	**4%**	**3.2%**

Source: Experian.
Ref: CSN Explained.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017-2018 – NORTHERN IRELAND



Source: Experian.
Ref: CSN Explained.

BEYOND 2021

Some of the big residential developments currently being mooted, such as those at Rivenwood and Ballyclare, are long-term projects which will continue to deliver output well beyond the current forecast period.

The Islandmagee gas storage facility project is a long-term one, for which the final investment decision is currently scheduled for the end of this year. The estimated timescale for the whole project is seven years in three construction phases, thus even if it were to start in 2018, construction would continue until 2025.

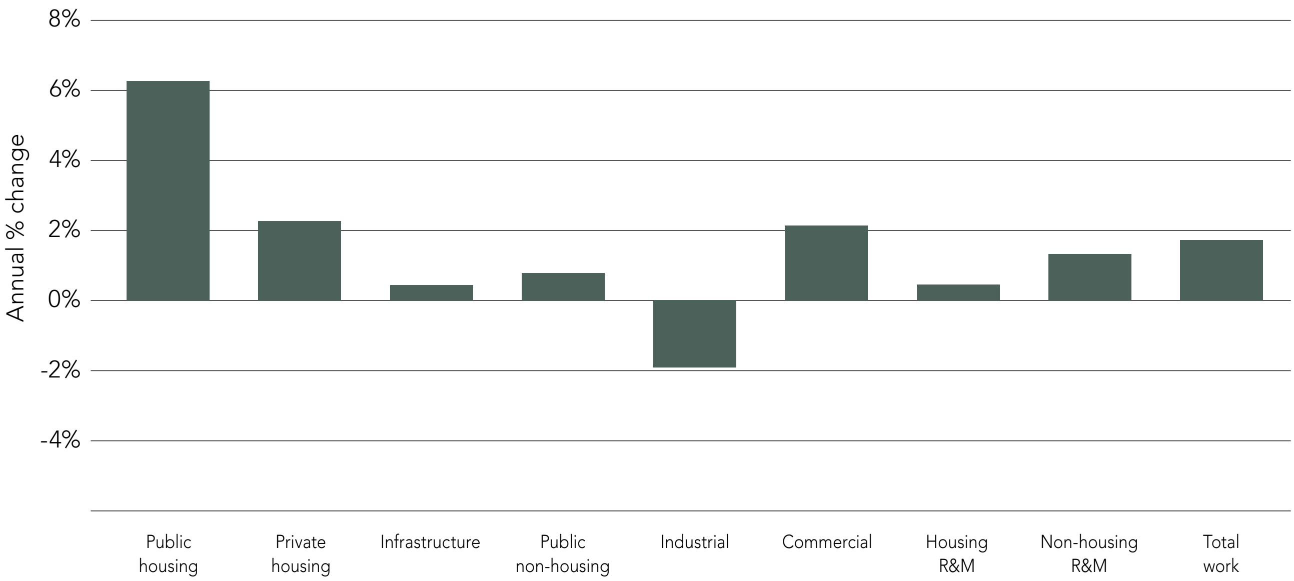
The planning application for the proposed 100MW Fair Head Tidal Array project is still to be submitted, with phase 1 of the project – which is the 'demonstrator' project of 10MW – scheduled to start in 2018 and phase 2 – the main 100MW installation – in 2021. However, this schedule is currently indicative only.

CONSTRUCTION OUTPUT – NORTHERN IRELAND (£ MILLION, 2013 PRICES)

	Estimate	Forecast annual % change					Annual average
	2016	2017	2018	2019	2020	2021	2017-2021
Public housing	173	8%	9%	2%	6%	5%	6.1%
Private housing	476	7%	5%	0%	1%	-1%	2.2%
Infrastructure	415	6%	2%	6%	-3%	-7%	0.5%
Public non-housing	419	-2%	9%	-1%	-3%	2%	0.8%
Industrial	57	-8%	7%	-2%	-3%	-3%	-1.9%
Commercial	186	-2%	2%	3%	4%	2%	2.1%
New work	**1,725**	**3%**	**5%**	**2%**	**0%**	**-1%**	**1.8%**
Housing R&M	216	-2%	-2%	2%	2%	2%	0.5%
Non-housing R&M	393	3%	0%	2%	2%	-1%	1.2%
R&M	**608**	**1%**	**-1%**	**2%**	**2%**	**0%**	**1.0%**
Total work	**2,334**	**3%**	**4%**	**2%**	**0%**	**-1%**	**1.6%**

Source: CSN, Experian.
Ref: CSN Explained.

ANNUAL AVERAGE CONSTRUCTION OUTPUT GROWTH 2017–2021 – NORTHERN IRELAND



Source: CSN, Experian.
Ref: CSN Explained.

CONSTRUCTION EMPLOYMENT FORECASTS FOR NORTHERN IRELAND

TOTAL CONSTRUCTION EMPLOYMENT FORECASTS BY OCCUPATION

The table presents actual construction employment (SICs 41-43, 71.1 and 74.9) in Northern Ireland 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 Northern Ireland is expected to grow at an annual average rate of 0.4% over the forecast period, slightly lower than the UK rate of 0.6%. Employment is projected to reach around 64,100 in 2021, 2.3% higher than in 2016 but still nearly 12% down on its 2008 peak. This is no real surprise as output in 2021 is forecast to be only 70% of its 2007 peak in real terms.

Generally, managerial and professional occupations are projected to fare better across the UK as a whole, but this is not expected to be the situation in Northern Ireland where some of the core trades are likely to have the highest annual average growth rates – roofers (4.7%), bricklayers (4.5%) and wood trades and interior fit-out (2.9%). The best prospects on the managerial side are for construction project managers (0.9%) and on the professional side for architects (1.8%) and other construction professionals and technical staff (1.9%). Overall 17 out of the 28 occupational categories are expected to see growth to 2021.

TOTAL EMPLOYMENT BY OCCUPATION – NORTHERN IRELAND

	Actual	Estimate	Forecast	
	2015	2016	2017	2021
Senior, executive, and business process managers	3,300	3,560	3,400	3,340
Construction project managers	900	990	930	1,030
Other construction process managers	4,840	5,000	4,810	5,080
Non-construction professional, technical, IT, and other office-based staff	6,830	7,140	6,700	6,420
Construction trades supervisors	1,040	1,060	970	1,070
Wood trades and interior fit-out	9,340	8,920	9,590	10,280
Bricklayers	2,410	2,480	2,680	3,080
Building envelope specialists	1,050	1,070	1,130	1,210
Painters and decorators	2,810	2,770	2,980	3,080
Plasterers	2,100	1,940	2,030	1,970
Roofers	920	900	970	1,130
Floorers	250	250	260	270
Glaziers	560	530	550	520
Specialist building operatives nec*	670	650	700	720
Scaffolders	280	310	280	280
Plant operatives	1,760	1,880	1,780	1,760
Plant mechanics/fitters	720	690	750	790
Steel erectors/structural fabrication	200	190	200	180
Labourers nec*	3,740	4,000	3,730	3,520
Electrical trades and installation	4,920	4,690	4,830	4,560
Plumbing and HVAC Trades	3,590	3,530	3,610	3,330
Logistics	490	530	520	580
Civil engineering operatives nec*	540	590	540	530
Non–construction operatives	190	210	200	210
Civil engineers	2,400	2,640	2,480	2,430
Other construction professionals and technical staff	3,010	3,310	3,240	3,630
Architects	1,630	1,780	1,720	1,950
Surveyors	1,000	1,060	1,030	1,110
Total (SIC 41-43)	**53,450**	**53,880**	**54,140**	**54,940**
Total (SIC 41-43, 71.1, 74.9)	**61,490**	**62,670**	**62,610**	**64,060**

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 ARR for Northern Ireland stands at 710 for the 2017 to 2021 period, down on the 1,760 figure published for the 2016 to 2020 period, due to a weakening of the demand side in the medium term. The ARR of 710 represents 1.1% of base projected 2017 employment, a little lower than the UK ratio of 1.4%.

In absolute terms the biggest requirements are for bricklayers (170) and wood trades and interior fit-out (140), but on a relative level (as a ratio of base employment) bricklayers and roofers show up as red on the traffic light system, with ratios of 6.3% and 5.2% respectively. This could indicate potential skills shortages in the medium term if training supply numbers are unable to match these requirements.

Please note that all of the ARRs presented in this section are employment requirements and not necessarily training requirements. This is because some new entrants to the construction industry, such as skilled migrants or those from other industries where similar skills are already used, will be able to work in the industry without the need for significant retraining.

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

ANNUAL RECRUITMENT REQUIREMENT BY OCCUPATION – NORTHERN IRELAND

	2017-2021
Senior, executive, and business process managers	–
Construction project managers	<50
Other construction process managers	70
Non-construction professional, technical, IT, and other office-based staff	–
Construction trades supervisors	–
Wood trades and interior fit-out	140
Bricklayers	170
Building envelope specialists	<50
Painters and decorators	50
Plasterers	50
Roofers	50
Floorers	<50
Glaziers	–
Specialist building operatives nec*	–
Scaffolders	–
Plant operatives	<50
Plant mechanics/fitters	<50
Steel erectors/structural fabrication	–
Labourers nec*	–
Electrical trades and installation	–
Plumbing and HVAC Trades	–
Logistics	–
Civil engineering operatives nec*	–
Civil engineers	–
Other construction professionals and technical staff	70
Architects	–
Surveyors	–
Total (SIC 41-43)	**640**
Total (SIC 41-43, 71.1, 74.9)	**710**

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.

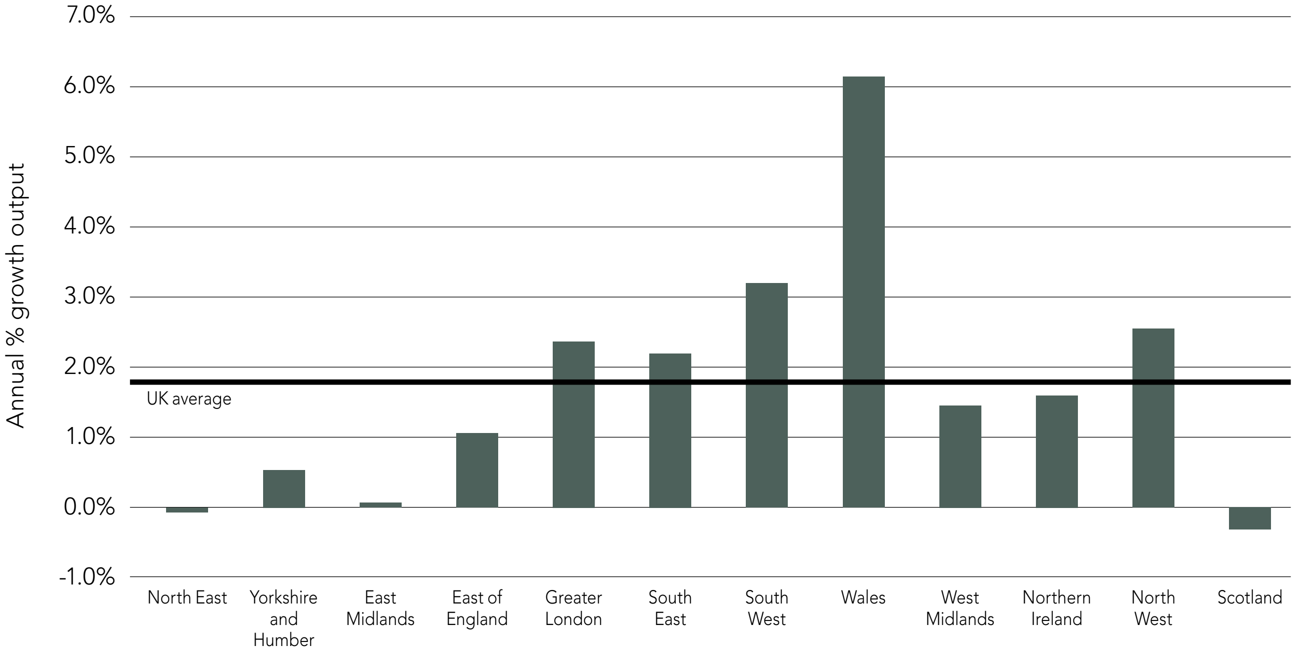
Employment growth across the regions and devolved nations tends to mirror that of output, but at a lower level to take account of expected productivity gains and with some minor adjustments depending on whether output growth is in high or low labour-intensive sectors. Annual average employment growth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

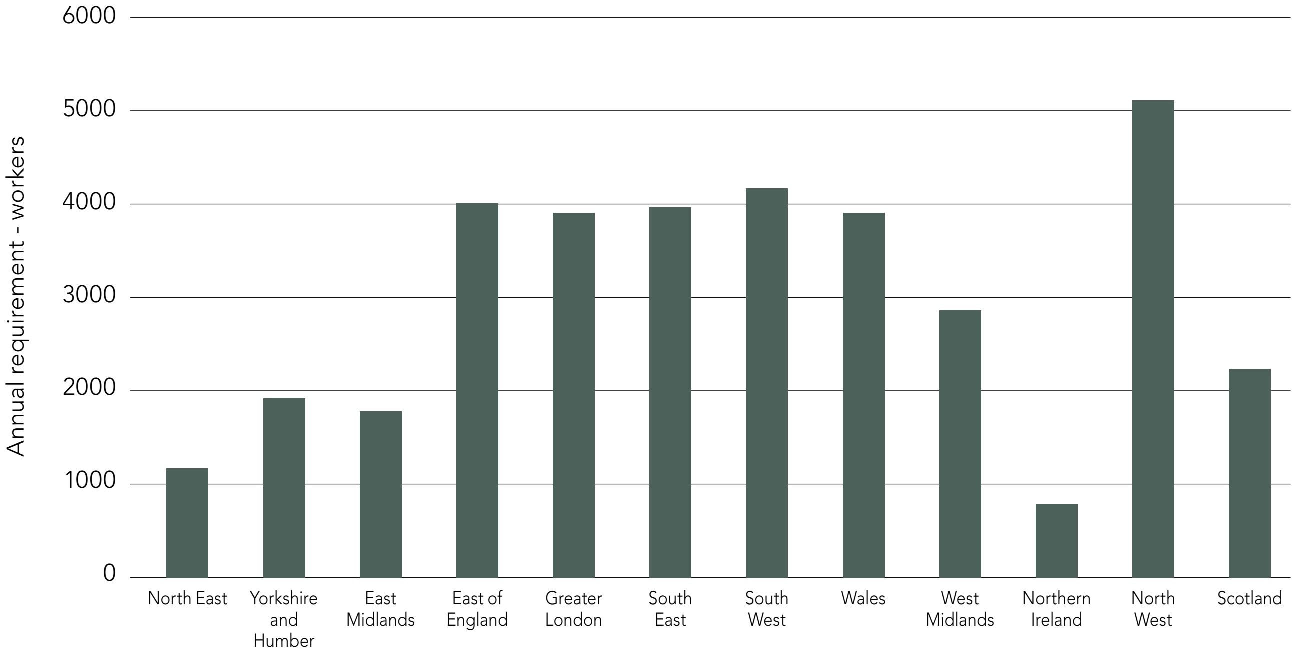
The pattern of annual recruitment requirements can look significantly different to the profile of output and employment, as some regions and devolved nations have historically strong net inflows and some suffer from large net outflows. Thus, Greater London's ARR represents just 0.9% of base 2017 employment, 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.

> Core trades are likely to have the highest annual average growth rates – roofers 4.7%, bricklayers 4.5% and wood trades and interior fit out 2.9%.

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:

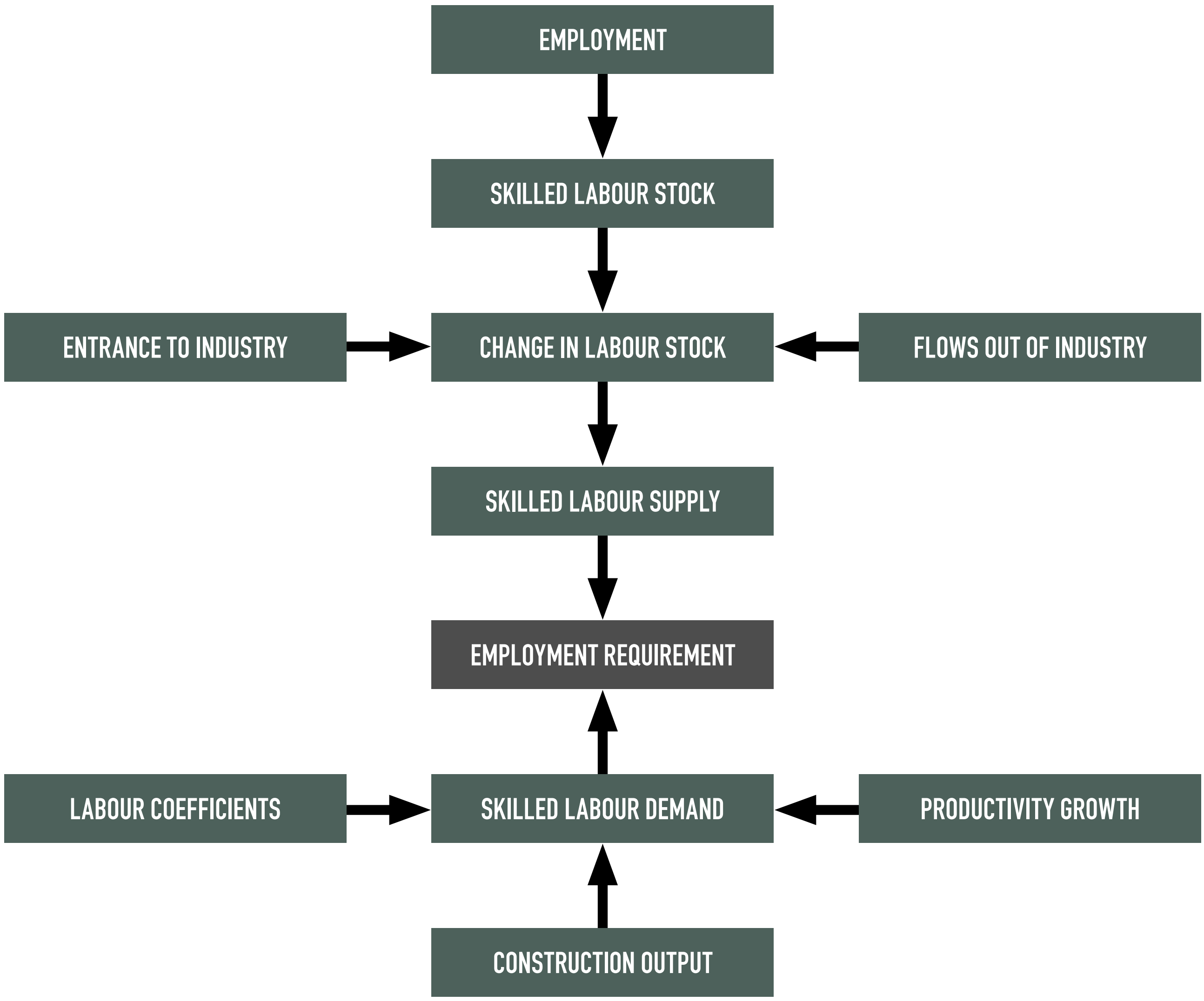
- Transfers to other industries
- International/domestic out migration
- Permanent retirements (including permanent sickness)
- Outflow to temporary sickness and home duties.

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

Our current baseline forecast assumes that a deal will eventually be struck within a 4 year time horizon and it will include some form of trade access to the single market. As it is unlikely that the terms will be as good as the current situation, we have made a small downgrade to our long term export and investment projections, compared to our pre-Brexit vote baseline. No adjustments have been made to underlying population projections in our base case but downside risks clearly exist on this front from a potential slowdown in EU migration.

The UK economy remains too reliant on consumer spending. As we move into 2017 we expect spending to slow on the back of lower real income growth and a weaker employment market. But given the easing in financial conditions following the Bank of England's cut to interest rates and the potential boost to exports from the lower pound, we expect growth to remain resilient at 1.4%.

DEFINITIONS: TYPES AND EXAMPLES OF CONSTRUCTION WORK

Public sector housing – local authorities and housing associations, new towns and government departments

Housing schemes, care homes for the elderly and the provision within housing sites of roads and services for gas, water, electricity, sewage and drainage.

Private sector housing

All privately owned buildings for residential use, such as houses, flats and maisonettes, bungalows, cottages and the provision of services to new developments.

Infrastructure – public and private

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

Sewerage
Sewage disposal works, laying of sewers and surface drains.

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

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

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

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

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

Public non-residential construction[1]

Factories and warehouses
Publicly owned factories, warehouses, skill centres.

Oil, steel, coal
Now restricted to remedial works for public sector residual bodies.

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

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

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

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

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

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

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

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

Private industrial work

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

Private commercial work[1]

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

Health
Private hospitals, nursing homes, clinics.

Offices
Office buildings, banks.

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

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

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

Agriculture
All buildings and work on farms, horticultural establishments.

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

New work

New housing
Construction of new houses, flats, bungalows only.

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

Repair and maintenance

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

All other sectors:
Repair and maintenance work of all types, including planned and contractual maintenance.[3]

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

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

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

OCCUPATIONAL GROUPS

Occupational group Description, SOC (2010) reference.	
Senior, executive, and business process managers	
Chief executives and senior officials	1115
Financial managers and directors	1131
Marketing and sales directors	1132
Purchasing managers and directors	1133
Human resource managers and directors	1135
Property, housing and estate managers	1251
Information technology and telecommunications directors	1136
Research and development managers	2150
Managers and directors in storage and warehousing	1162
Managers and proprietors in other services nec*	1259
Functional managers and directors nec*	1139
IT specialist managers	2133
IT project and programme managers	2134
Financial accounts managers	3538
Sales accounts and business development managers	3545
Construction project managers	
Construction project managers and related professionals	2436
Other construction process managers	
Production managers and directors in manufacturing	1121
Production managers and directors in construction	1122
Managers and directors in transport and distribution	1161
Waste disposal and environmental services managers	1255
Health and safety officers	3567
Conservation and environmental associate professionals	3550
Non-construction professional, technical, IT, and other office-based staff (excl. managers)	
IT operations technicians	3131
IT user support technicians	3132
Finance and investment analysts and advisers	3534
Taxation experts	3535
Financial and accounting technicians	3537
Vocational and industrial trainers and instructors	3563
Business and related associate professionals nec*	3539
Legal associate professionals	3520
Inspectors of standards and regulations	3565
Programmers and software development professionals	2136
Information technology and telecommunications professionals nec*	2139
Estate agents and auctioneers	3544
Solicitors	2413
Legal professionals nec*	2419
Chartered and certified accountants	2421
Business and financial project management professionals	2424
Management consultants and business analysts	2423
Receptionists	4216
Typists and related keyboard occupations	4217
Business sales executives	3542
Bookkeepers, payroll managers and wages clerks	4122
Records clerks and assistants	4131
Stock control clerks and assistants	4133
Telephonists	7213
Communication operators	7214
Personal assistants and other secretaries	4215
Sales and retail assistants	7111
Telephone salespersons	7113
Buyers and procurement officers	3541
Human resources and industrial relations officers	3562
Credit controllers	4121
Company secretaries	4214
Sales related occupations nec*	7129
Call and contact centre occupations	7211
Customer service occupations nec*	7219
Elementary administration occupations nec*	9219
Chemical scientists	2111
Biological scientists and biochemists	2112
Physical scientists	2113
Laboratory technicians	3111
Graphic designers	3421
Environmental health professionals	2463
IT business analysts, architects and systems designers	2135
Conservation professionals	2141
Environment professionals	2142
Actuaries, economists and statisticians	2425
Business and related research professionals	2426
Finance officers	4124
Financial administrative occupations nec*	4129
Human resources administrative occupations	4138
Sales administrators	4151
Other administrative occupations nec*	4159
Office supervisors	4162
Sales supervisors	7130
Customer service managers and supervisors	7220
Office managers	4161
Construction trades supervisors	
Skilled metal, electrical and electronic trades supervisors	5250
Construction and building trades supervisors	5330
Wood trades and interior fit-out	
Carpenters and joiners	5315
Paper and wood machine operatives	8121
Furniture makers and other craft woodworkers	5442
Construction and building trades nec* (25%)	5319
Bricklayers	
Bricklayers and masons	5312

Building envelope specialists	
Construction and building trades nec* (50%)	5319
Painters and decorators	
Painters and decorators	5323
Construction and building trades nec* (5%)	5319
Plasterers	
Plasterers	5321
Roofers	
Roofers, roof tilers and slaters	5313
Floorers	
Floorers and wall tilers	5322
Glaziers	
Glaziers, window fabricators and fitters	5316
Construction and building trades nec* (5%)	5319
Specialist building operatives not elsewhere classified (nec*)	
Construction operatives nec* (100%)	8149
Construction and building trades nec* (5%)	5319
Industrial cleaning process occupations	9132
Other skilled trades nec*	5449
Scaffolders	
Scaffolders, stagers and riggers	8141
Plant operatives	
Crane drivers	8221
Plant and machine operatives nec*	8129
Fork-lift truck drivers	8222
Mobile machine drivers and operatives nec*	8229
Plant mechanics/fitters	
Metalworking production and maintenance fitters	5223
Precision instrument makers and repairers	5224
Vehicle technicians, mechanics and electricians	5231
Elementary process plant occupations nec*	9139
Tool makers, tool fitters and markers-out	5222
Vehicle body builders and repairers	5232
Steel erectors/structural fabrication	
Steel erectors	5311
Welding trades	5215
Metal plate workers and riveters	5214
Construction and building trades nec* (5%)	5319
Smiths and forge workers	5211
Metal machining setters and setter-operators	5221
Labourers nec*	
Elementary construction occupations (100%)	9120
Electrical trades and installation	
Electricians and electrical fitters	5241
Electrical and electronic trades nec*	5249
Telecommunications engineers	5242
Plumbing and heating, ventilation, and air conditioning trades	
Plumbers and heating and ventilating engineers	5314
Pipe fitters	5216
Construction and building trades nec* (5%)	5319
Air-conditioning and refrigeration engineers	5225
Logistics	
Large goods vehicle drivers	8211
Van drivers	8212
Elementary storage occupations	9260
Buyers and purchasing officers (50%)	3541
Transport and distribution clerks and assistants	4134
Civil engineering operatives not elsewhere classified (nec*)	
Road construction operatives	8142
Rail construction and maintenance operatives	8143
Quarry workers and related operatives	8123
Non-construction operatives	
Metal making and treating process operatives	8117
Process operatives nec*	8119
Metalworking machine operatives	8125
Water and sewerage plant operatives	8126
Assemblers (vehicles and metal goods)	8132
Routine inspectors and testers	8133
Assemblers and routine operatives nec*	8139
Elementary security occupations nec*	9249
Cleaners and domestics*	9233
Street cleaners	9232
Gardeners and landscape gardeners	5113
Caretakers	6232
Security guards and related occupations	9241
Protective service associate professionals nec*	3319
Civil engineers	
Civil engineers	2121
Other construction professionals and technical staff	
Mechanical engineers	2122
Electrical engineers	2123
Design and development engineers	2126
Production and process engineers	2127
Quality control and planning engineers	2461
Engineering professionals nec*	2129
Electrical and electronics technicians	3112
Engineering technicians	3113
Building and civil engineering technicians	3114
Science, engineering and production technicians nec*	3119
Architectural and town planning technicians*	3121
Draughtspersons	3122
Quality assurance technicians	3115
Town planning officers	2432
Electronics engineers	2124
Chartered architectural technologists	2435
Estimators, valuers and assessors	3531
Planning, process and production technicians	3116
Architects	
Architects	2431
Surveyors	
Quantity surveyors	2433
Chartered surveyors	2434

**Not elsewhere classified*

For more information about the Construction Skills Network, contact:

Kirsty Woolsey
Research Analyst
0300 456 7807
kirsty.woolsey@citb.co.uk

Karen Hunter
CITB NI
02890824233
karen.hunter@citbni.org.uk

citb.co.uk/csn
citbni.org.uk

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