

Construction Skills Network Scotland

LABOUR MARKET INTELLIGENCE 2009–2013



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ConstructionSkills is the Sector Skills Council for construction, tasked by Government to ensure the UK's largest 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.

1 Headlines

1.1 Scotland's economy

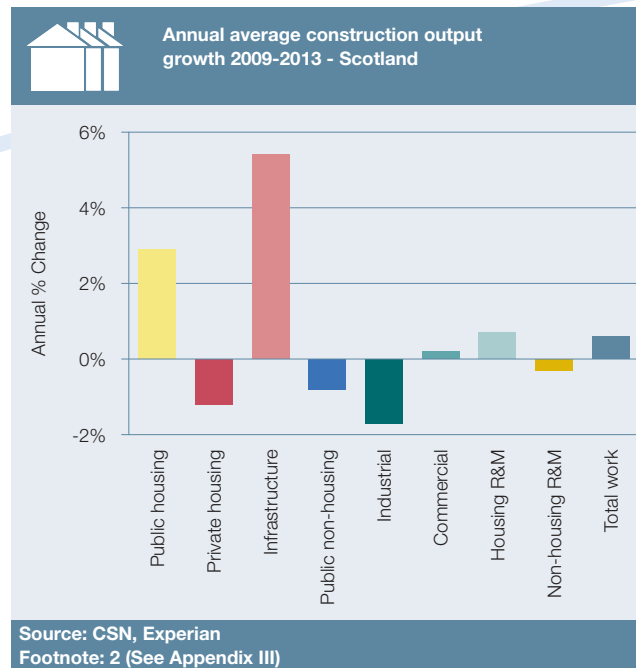
- Scotland's economy was worth a total of £86.4bn in 2007 at 2003 prices, a 2% increase on the previous year and equivalent to 7.8% of the UK total.
- The largest sector of the Scottish economy is public services, taking a 26.9% share of total output, although it is slowly losing share to financial and business services.
- Economic growth in the region is forecast at an annual average rate of 0.8% between 2009 and 2013, significantly below the UK average of 1.4%. This outlook includes a fall of 1.9% in GVA in 2009 as the current recession deepens.

1.2 Construction output in Scotland

- Worth close to £6.7bn in 2007, in 2000 prices, construction output in Scotland accounted for around 8% of the UK total, a similar share to that of the West Midlands, South West, and Yorkshire and Humber.
- Output is forecast to grow at an annual average rate of 0.6% between 2009 and 2013, similar to the UK average.
- Infrastructure is expected to be by far the strongest construction sector in Scotland, driven along by investment in road and rail projects as part of the Scottish Government's 10-year £3bn transport investment programme.

1.3 Construction employment in Scotland

- Total construction employment of just over 236,000 in 2007 in Scotland is forecast to drop to around 222,600 in 2009, before rising again to about 228,000 in 2013.
- To meet demand in the 2009–2013 period, after taking into account those entering the industry other than from training and those leaving, 3,960 new workers will be required to join the industry each year.
- The largest annual recruitment requirements (ARR) are expected to be for wood trades and interior fit-out and plant operatives.



Regional comparison 2009-2013

	Annual average % change in output	Growth in total employment	Total ARR
North East	0.5%	5,620	2,010
Yorkshire and Humber	0.0%	2,860	1,390
East Midlands	0.8%	6,220	1,980
East of England	0.9%	10,570	2,890
Greater London	0.8%	12,110	6,030
South East	0.5%	13,290	5,690
South West	-0.2%	-20	1,450
Wales	0.6%	4,940	2,330
West Midlands	0.2%	3,930	3,620
Northern Ireland	1.6%	3,030	900
North West	0.2%	6,040	4,780
Scotland	0.6%	5,480	3,960
UK	0.5%	74,070	37,030

Source: CSN, Experian
Footnote: 2 (See Appendix III)

Scotland's economy was worth a total of

£86.4bn in 2007

at 2003 prices, a 2% increase on the previous year and equivalent to 7.8% of the UK total

2 The outlook for construction in Scotland

2.1 Construction output in Scotland – overview

Construction output in Scotland came to an estimated £6.7bn, in 2000 prices, in 2007, a close to 7% fall on 2006. Both new work, and repair and maintenance declined, the former by 9% and the latter by 4%.

The fall in output in 2007 followed four years of growth at the end of which its level passed the £7bn mark in 2000 prices in Scotland for the first time. During this period Scottish construction output grew by an average annual rate of 4.3%, with the public non-housing and industrial sectors particularly strong.

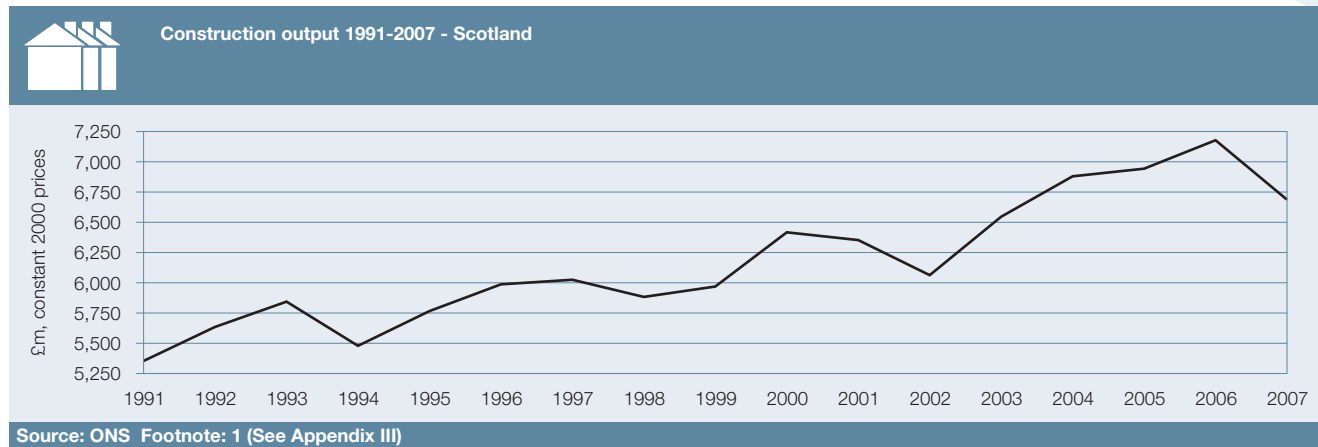
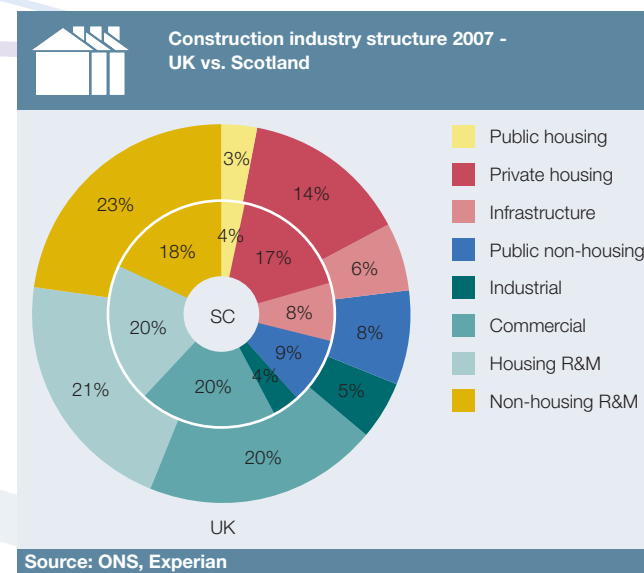
In 2007 only the public housing, infrastructure and commercial sectors experienced growth, which was fairly modest compared to the falls in output seen in the private housing, public non-housing and industrial sectors.

2.2 Industry structure

The diagram illustrates the sector breakdown of construction in Scotland compared to that in the UK in 2007. Effectively, the percentages for each sector illustrate what proportion of total output each sector accounts for.

The Scottish construction industry traditionally has a higher share of new work than the UK as a whole, 62% compared with 57% respectively, although for both, its share declined slightly between 2006 and 2007.

The private housing and public non-housing sectors' shares both fell by 2% respectively in 2007, while that of the commercial sector rose by the same percentage.



Worth close to
£6.7bn in 2007

at 2000 prices, construction output in Scotland accounted for around 8% of the UK total

2.3 Economic overview

The expected performance of a regional or national economy over the forecast period (2009–2013) provides an indication of the construction sectors in which demand is likely to be strongest.

2.4 Economic structure

Gross value added (GVA) in Scotland was valued at £86.4bn in 2007 at 2003 prices, 7.8% of the UK economy as a whole. This was 2% higher than in the previous year.

Unlike the UK, Scotland's largest economic sector is public services, accounting for nearly 27% of output in 2007, although its share has been falling from a peak of just over 28% in 2003. Financial and business services' share of output north of the border has been rising steadily, from just under 18% in 2000 to over 23.5% in 2007, although it still remains nearly 6% below the proportion in the UK as a whole. Scotland has a proportionally smaller manufacturing sector, accounting for close to 12% of output compared with 14% in the UK as a whole, and its share has declined by 2% since 2000.



The third Maggie's Centre, built in Dundee, Scotland

Economic structure - Scotland (£ billion, 2003 prices)							
Selected sectors	Actual	Forecast					
	2007	Annual % change, real terms					
	2007	2008	2009	2010	2011	2012	2013
Public services	23	2.4	-0.1	0.7	1.1	0.9	0.8
Financial and business services	20	5.1	-1.2	3.6	6.0	6.3	6.2
Transport and communications	8	-3.7	-0.5	2.2	2.5	2.1	2.0
Manufacturing	12	-1.0	-2.7	0.6	0.9	0.2	0.1
Distribution, hotels and catering	12	2.4	-1.2	1.1	1.8	1.7	1.6
Total Gross Value Added (GVA)	86	0.0	-1.9	0.9	1.7	1.6	1.7

Source: Experian
Footnote: 3 (See Appendix III)

Economic indicators - Scotland (£ billion, 2003 prices - unless otherwise stated)							
	Actual	Forecast					
	2007	Annual % change, real terms					
	2007	2008	2009	2010	2011	2012	2013
Real household disposable income	64	-0.1	-0.6	0.5	1.2	1.6	1.6
Household spending	65	2.0	-0.4	0.7	1.7	1.6	1.6
Debt:income ratio	1.3	3.0	1.2	-1.4	-2.6	-2.3	-1.5
House prices (£'000, current prices)	159	2.4	-7.6	-1.5	-0.7	0.0	1.2
LFS unemployment (millions)	0.13	-4.4	41.6	10.6	-7.8	-11.5	-6.3

Source: ONS, DCLG, Experian

2.5 Forward looking economic indicators

The worsening economic situation is affecting all parts of the UK and Scotland's GVA growth over 2009–2013 is forecast to be a modest 4%, with a decline of nearly 2% in 2009. This equates to an average annual growth rate of 0.8% for Scotland, compared with 1.4% for the UK as a whole.

The public sector is expected to hold its share of the Scottish economy going forward, but still to be overtaken by financial and business services, which is predicted to become the largest sector north of the border in 2012, notwithstanding its current problems.

In the short term growth in real household disposable income (RHDI) is expected to have stagnated in 2008 in Scotland, and a fall is predicted for 2009 before a recovery starts in 2010. With total employment forecast to fall by over 3% in the three years to 2011, consumer spending will come under pressure. This may benefit the debt-to-income ratio, although in Scotland it had remained relatively low compared with the UK as a whole.

The Department for Communities and Local Government (DCLG) reported that average house prices in Scotland reached over £159,000 in 2007, a rise of 14% on the previous year. However, by the third quarter of 2008 year-on-year increases in house prices had slowed to just 0.4%, although this was a better result than for any other region or country in the UK.

House prices in Scotland are likely to fare better than in the UK as a whole, with a total fall off around 10% in real terms predicted between 2009 and 2011 in Scotland, compared with 19% in the UK.

2.6 New construction orders – overview

New construction orders fell in Scotland in 2007 for the first time in six years, albeit the fall was a marginal 1% to £4.7bn in current prices.

The fall was largely concentrated in the industrial and commercial sectors, with declines of 10% and 15% respectively, while those for public housing and infrastructure work were significantly higher than in 2006.

2.7 New construction orders – current situation

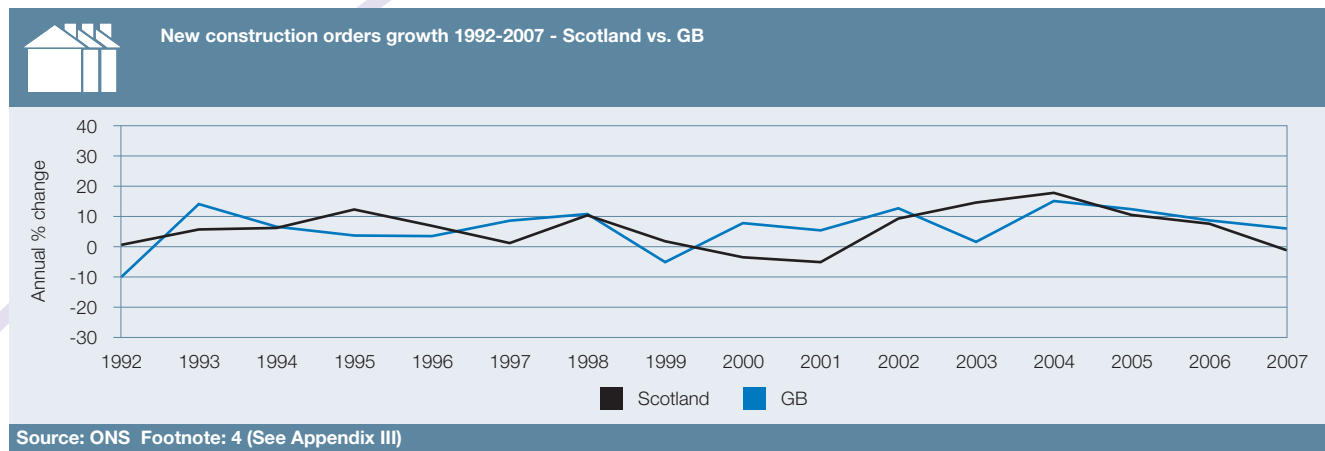
The level of new orders in Scotland continued to drop in the first three quarters of 2008 with the total for that period £3.41bn, nearly 5% below the same period of 2007. The third quarter 2008 figure, at £759m in current prices was the lowest quarterly outturn since the final quarter of 2003.

The private housing sector joined the industrial and commercial ones as the weakest in terms of new orders, indicating that the credit crunch and associated financial problems have really begun to bite on the real economy. New orders for private housing were down 23% year-on-year in the first three quarters of 2008, while those for industrial and commercial work had fallen by 11% and 27% respectively.

In contrast, new infrastructure orders were up by 74% over the same period, with a particularly strong second quarter of the year as the order for the completion of the M74 was placed. This illustrates the fact that in the infrastructure sector a single order can make a very significant difference to the figures and it should be remembered that output streams from these large orders can be spread over many years.

New work construction orders - Scotland (£ million, current prices)						
	Actual	Annual % change				
	2007	2003	2004	2005	2006	2007
Public housing	311	-9.0	15.2	-0.5	31.6	20.4
Private housing	1338	35.5	38.2	3.2	-23.3	3.7
Infrastructure	633	17.1	-4.4	-8.3	-5.1	41.0
Public non-housing	686	64.8	-18.0	47.9	-9.5	-7.3
Industrial	226	-19.0	6.7	48.4	6.4	-10.1
Commercial	1513	-19.6	38.5	7.6	73.7	-14.8
Total new work	4707	14.6	17.8	10.5	7.6	-1.2

Source: ONS
Footnote: 4 (See Appendix III)



2.8 Construction output – short-term forecasts (2009–2010)

Regional Office of National Statistics (ONS) output statistics are published in current prices and are thus inclusive of any inflationary effect. At the time of writing, ONS construction output statistics are only available for the first three quarters of 2008.

Total construction output, in current prices, in Scotland held up reasonably well in the first three quarters of 2008, reaching £8.2bn, 4% higher than in the same period of 2007. With construction output inflation slowing, this could represent a slight rise in real terms. Growth was stronger in the repair and maintenance sector, up by 7%, than the new work one, which only saw an increase of 2%. However, for the year as a whole the outturn is expected to be a little down in real terms.

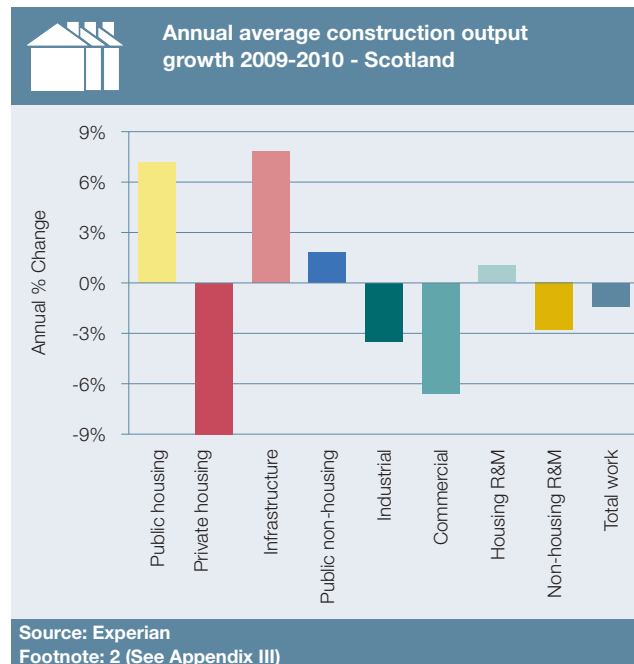
The short-term outlook for the Scottish construction industry is not good. Output is forecast to fall by 3% in 2009 and then stabilise in 2010, giving an average annual growth rate over the two years of -1.4%.

Not surprisingly, a large proportion of the decline is expected in private housing. While house prices are forecast to fare better in Scotland than the UK as a whole, it is not immune from the effect the credit crunch is having on the ability of prospective purchasers to obtain mortgage finance and thus on overall demand for new housing. Housing starts in Scotland have held up well in the first half of 2008, but this data is at variance with both new orders and output figures which are showing a downward trend.

The commercial sector is also predicted to suffer a significant decline in the short term. The economic downturn has brought the current office development cycle to a juddering halt and there are worries that in centres such as Edinburgh,

a low level of pre-lets for premises currently under construction will lead to oversupply in the market. Retailers and leisure providers are likely to experience a tough couple of years with consumer spending growth forecast to turn negative in 2009, affecting proposed expansion plans.

However, the outlook is not bleak across the board, with work related to the Scottish Government's £3bn 10-year transport plan helping to boost infrastructure output in both the short and medium term. As has already been mentioned, the M74 completion project started in May 2008 and is due for completion in 2011 at a cost of £445m. Preparatory work has also begun on the Glasgow Airport Rail Link, with main works on this £130m project starting in 2009.



Construction output - Scotland
(£ million, 2000 prices)

	Actual	Forecast annual % change			Annual average
	2007	2008	2009	2010	2009-2010
Public housing	237	15%	9%	5%	7.2%
Private housing	1,144	-22%	-20%	4%	-9.0%
Infrastructure	559	30%	11%	5%	7.8%
Public non-housing	628	-2%	3%	0%	1.8%
Industrial	266	-11%	-7%	0%	-3.5%
Commercial	1,323	-8%	-9%	-4%	-6.6%
New work	4,158	-5%	-5%	1%	-1.8%
Housing R&M	1,331	3%	1%	1%	1.0%
Non-housing R&M	1,198	-1%	-3%	-2%	-2.8%
Total R&M	2,528	1%	-1%	-1%	-0.7%
Total work	6,687	-2%	-3%	0%	-1.4%

Source: Experian
Footnote: 1 and 2 (See Appendix III)

2.9 Construction output – long-term forecasts (2009–2013)

Looking at the longer term, growth should return to the Scottish construction industry in 2011, with the average annual rate over 2009–2013 expected to be 0.6%, slightly above the UK average of 0.5%. Overall, new work growth is predicted to exceed that of repair and maintenance as the new private housing and commercial markets recover, and the infrastructure sector continues to be strong.

Average annual growth in the infrastructure sector is expected to be around 5.4% over the period 2009–2013, almost twice the rate of the next strongest sector, the public housing one. The strength of activity continues to be driven by the Scottish Government’s 10-year transport investment plan, worth around £3bn. The M74 completion project will continue to provide an output stream until 2011, as will the Glasgow Airport Rail Link, due to start in earnest in 2009.

However, the biggest project in the pipeline is the Forth Replacement Crossing, a five-year project starting in 2011 with an estimated cost of between £1.7bn and £2.3bn. This project in essence has a no-fail completion date of 2016 as current research into the deterioration of the current Forth Road Bridge indicates that it may need to be closed to heavy goods traffic as early as 2017.

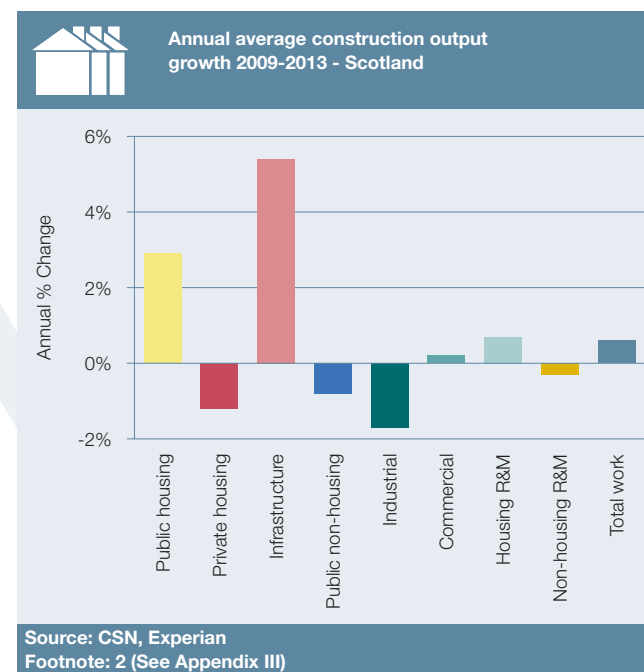
The Scottish Government is currently going through a consultation process on how investment in affordable housing can be used most efficiently to maximise the supply of new affordable homes. This consultation is due to be completed in April 2010, when lead developers will be identified for 2010–2015 and subsidies awarded for 2010 to 2012. Thus the expectation is that the social housing market will grow over most of the forecast period.

The fact that the £1.1bn of investment in the schools’ built environment is Public-Private Partnership (PPP) work, and thus appears in the private commercial sector, means that public non-housing output is predicted to continue to fall from its very high peak in 2006. However, there is some £530m of colleges projects due to start by 2010, the largest of which is the £300m Glasgow Colleges one.

We expect the worst to be over for the private housing market by 2010, although the steep fall in output for 2009 means that the average annual growth rate for 2009–2013 is negative.

Industrial and commercial work, as is the case in all other regions and nations, will continue to suffer from falling manufacturing output and weak demand from both the domestic and export markets in the short term. However as the economic environment improves and credit conditions ease, manufacturers may find that the relative weakness of sterling against the euro and dollar may help to boost exports, and demand for office, retail and leisure facilities should return.

Growth in the R&M sector may be driven by the Scottish Housing Quality Standard programme, a programme to bring all social housing up to an agreed standard by 2015. However, the experience of Decent Homes for All, a similar programme that is due to finish in England in April 2010, is that work is slow to come through and does not necessarily create the output streams expected.





Construction output - Scotland
(£ million, 2000 prices)

	Estimate		Forecast annual % change				Annual average
	2008	2009	2010	2011	2012	2013	2009-2013
Public housing	273	9%	5%	2%	1%	-3%	2.9%
Private housing	891	-20%	4%	6%	5%	3%	-1.2%
Infrastructure	725	11%	5%	5%	3%	3%	5.4%
Public non-housing	615	3%	0%	-7%	-4%	4%	-0.8%
Industrial	238	-7%	0%	2%	0%	-3%	-1.7%
Commercial	1,219	-9%	-4%	4%	6%	4%	0.2%
New work	3,962	-5%	1%	2%	3%	3%	0.9%
Housing R&M	1,377	1%	1%	0%	0%	1%	0.7%
Non-housing R&M	1,188	-3%	-2%	0%	2%	2%	-0.3%
R&M	2,565	-1%	-1%	0%	1%	2%	0.3%
Total work	6,527	-3%	0%	1%	2%	2%	0.6%

Source: CSN, Experian
Footnote: 2 (See Appendix III)



3 Construction employment forecasts for Scotland

3.1 Total construction employment forecasts by occupation

The table, Total employment by occupation – Scotland, presents actual construction employment (SIC 45 and 74.2) in Scotland for 2007, and the forecast total employment for each of the 26 occupations between 2009 and 2013. A full breakdown of occupations is provided in Appendix IV.

Total construction employment by 2013 in Scotland is forecast to reach around 228,000 when including SIC 45 and 74.2. This represents a 2.4% increase on the projected total for 2009, but a 3.4% decline against the 2007 total. As is the case across most regions and nations in the UK, the poor economic conditions for 2008 and 2009 means falls in employment for those years, before a return to growth, for most regions and nations in 2010, but for some not until 2011.

The biggest occupational grouping in Scotland is wood trades and interior fit-out, accounting for 15.8% of construction employment north of the border in 2007 and this share is forecast to rise slightly to 16.2% by 2013. The share of this occupation in total construction employment in Scotland is about 6% higher than in the UK as a whole and this is because of the higher prevalence of timber-frame housing north of the border.

The largest annual recruitment requirements are expected to be for wood trades, interior fit-out and plant operatives

The largest percentage increases in employment between 2009 and 2013 are expected for surveyors (10.2%), senior, executive and business process managers (9.4%), and construction managers (7.3%). The biggest growth in absolute terms is likely in construction managers (1,170) with wood trades and interior fit-out coming second with 780, despite being a much bigger occupational category.

Construction professionals have been disaggregated in the 2008 run for the Construction Skills Network into four occupational categories – civil engineers, other construction professionals and technical staff, architects, and surveyors. The result of this disaggregation shows that 17% of construction professionals in Scotland are classified as civil engineers, 21% as architects and 17% as surveyors in 2007.



Total employment by occupation - Scotland			
	Actual	Forecast	
	2007	2009	2013
Senior, executive, and business process managers	7,840	7,250	7,930
Construction managers	17,170	16,010	17,180
Non-construction professional, technical, IT, and other office-based staff	20,530	19,200	19,970
Wood trades and interior fit-out	37,340	36,100	36,880
Bricklayers	7,050	6,460	6,680
Building envelope specialists	5,350	4,990	5,240
Painters and decorators	13,800	12,940	12,680
Plasterers and dry liners	3,310	3,180	3,320
Roofers	5,530	4,970	5,150
Floorers	2,440	2,280	2,380
Glaziers	2,230	2,050	2,180
Specialist building operatives nec*	5,020	4,590	4,620
Scaffolders	2,470	2,410	2,480
Plant operatives	7,900	7,850	7,480
Plant mechanics/fitters	2,200	1,970	2,000
Steel erectors/structural	4,060	3,830	3,880
Labourers nec*	13,030	12,470	13,000
Electrical trades and installation	13,190	11,940	12,060
Plumbing and HVAC Trades	14,950	14,220	14,200
Logistics	4,310	4,050	4,300
Civil engineering operatives nec*	6,760	6,660	6,700
Non-construction operatives	10,640	9,700	9,620
Civil engineers	5,010	4,910	5,050
Other construction professionals and technical staff	13,050	12,220	12,270
Architects	6,020	5,840	5,860
Surveyors	4,960	4,510	4,970
Total (SIC 45)	207,120	195,120	199,930
Total (SIC 45 and 74.2)	236,160	222,600	228,080

Source: ONS, CSN, Experian
Footnote: 5 and 6 (See Appendix III)

* nec - not elsewhere classified

3.2 Annual recruitment requirements by occupation

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 new entrant training, although robust data on training provision is being developed by ConstructionSkills in partnership with Further Education, Higher Education and Government representatives. Thus, the ARR provides an indication of the number of new employees that would need to be recruited into construction each year in order to realise forecast output.




The ARR for 26 occupations within Scotland's construction industry between 2009 and 2013 is illustrated in the table. The ARR of 3,960 is indicative of the average requirements per year for the industry, as based on the output forecasts for the region. This takes into account 'churn' – flows into and out of the industry.

The largest ARR's are expected to be for wood trades and interior fit-out (820) and plant operatives (320). As a percentage of 2009 employment, however, it is plant mechanics that are most in demand, their ARR representing over 8% of employment in that year. The ARR for plasterers and dry liners is around 7% of 2009 employment in that trade and for scaffolders nearly 6%.

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

Non-construction operatives is a diverse occupational group including all of the activities under the SIC 45 and SIC 74.2 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 - Scotland	
	2009-2013
Senior, executive, and business process managers	120
Construction managers	300
Non-construction professional, technical, IT, and other office-based staff	70
Wood trades and interior fit-out	820
Bricklayers	190
Building envelope specialists	100
Painters and decorators	170
Plasterers and dry liners	220
Roofers	50
Floorers	<50
Glaziers	<50
Specialist building operatives nec*	100
Scaffolders	140
Plant operatives	320
Plant mechanics/fitters	160
Steel erectors/structural	160
Labourers nec*	90
Electrical trades and installation	190
Plumbing and HVAC Trades	60
Logistics	70
Civil engineering operatives nec*	200
Non-construction operatives	
Civil engineers	110
Other construction professionals and technical staff	210
Architects	<50
Surveyors	<50
Total (SIC 45)	3,550
Total (SIC 45 and 74.2)	3,960
Source: CSN, Experian	
Footnote: 5 and 6 (See Appendix III)	

* nec - not elsewhere classified

4 Comparisons across the UK

Between 2009 and 2013 most regions and nations are forecast to experience a rise in construction output, the exceptions being the South West and Yorkshire and Humber the former of which is predicted to see a slight decline and the latter no change.

The South West does not benefit from growth in the infrastructure and public non-housing sectors in the way that many other regions and nations do, as there are no major civil engineering projects planned for the region within the forecast period and few local authorities feature in the early phases of the Building Schools for the Future programme (BSF). In Yorkshire and Humber, the low average annual growth rate is a function of a very poor 2009 predicated on the largest fall in new orders of any region or nation in 2008.

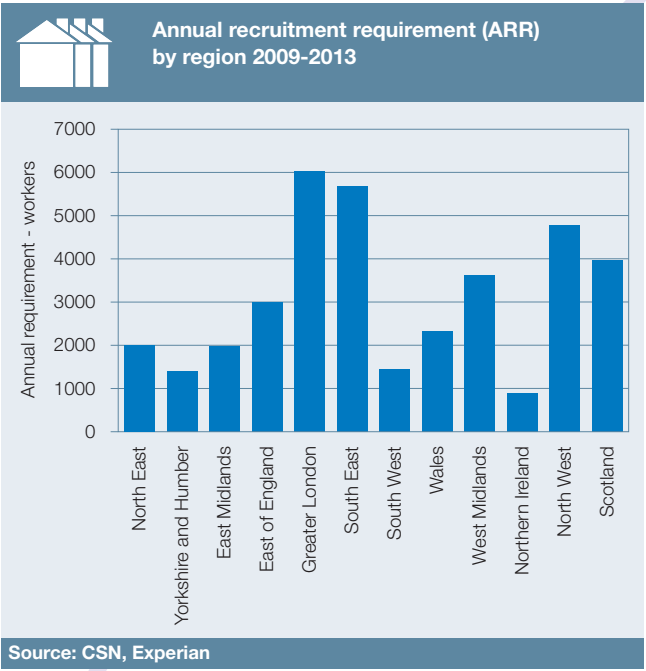
Northern Ireland continues to show the highest forecast growth in output, driven by the investment strategy planned for the next 10 years by the Northern Ireland Executive, although worries about how quickly this can be delivered have led to a lower growth rate than that put forward in previous years. The East Midlands, East of England and Greater London are also predicted to do better than the UK average, the capital in particular benefits from major infrastructure projects, the BSF programme, and Olympics build.

Scotland continues to benefit from its 10 year transport plan and the Forth Replacement Crossing Project, due to start in 2011 will be a significant driver of future activity

The ARR for 2009–2013 for Greater London is estimated to be the highest of the regions with just over 6,000 new entrants needed each year. This high ARR can in part be attributed to the region accounting for a large proportion of construction output for the UK as a whole. Next comes the South East with an ARR of around 5,700, not surprising given that the size of the construction market in the region is similar to Greater London's, and the North West with an ARR of close to 4,800.

The lowest ARR is for Northern Ireland at 900, despite the fact that the province has the highest output growth rate in the UK. This is because it is a small market, accounting for around 2.7% of UK output and 3.1% of UK employment. The North East has quite a high ARR, at a little over 2,000, compared to its market size. This is because it has a reasonable growth rate in output terms and it suffers from significant outflows of construction workers to other regions.





Appendix I – Methodology

Background

The **Construction Skills Network (CSN)**, launched in 2005, represents a radical change in the way that ConstructionSkills collect and produce information on the future employment and training needs of the industry. CITB-ConstructionSkills, CIC and CITB Northern Ireland are working as ConstructionSkills, the Sector Skills Council for Construction to produce robust Labour Market Intelligence to provide a foundation on which to plan for future skills needs and to target investment.

The CSN functions at both a national and regional level. It comprises of 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.



Oran Mor, heritage building, Glasgow

Observatory groups currently meet bi-annually and consist of key regional stakeholders invited from industry, Government, education and other SSCs, all of whom contribute 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. This Group convenes twice a year and sets the national scene, effectively forming a backdrop for the Observatories.

At the heart of the CSN is a forecasting model which generates forecasts of employment requirements within the industry for a range of trades. The model was designed and is managed by Experian under the independent guidance and validation of the Technical Reference Group, comprised of statisticians and modelling experts.

It is envisaged that the model will evolve over time as new research is published and modelling techniques improve. 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 model, which is 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 inter-related 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 new entrant training, although robust data on training provision is being developed by ConstructionSkills in partnership with Further Education, Higher Education and Government representatives. Thus, the ARR provides an indication of the number of new employees that would need to be recruited into construction each year in order to realise forecast output.

Demand is based upon the results of discussion groups comprising industry experts, a view of construction output and a set of integrated models relating to wider national and regional economic performance. The model is dynamic and reflects the general UK economic climate at any point in time. To generate the labour demand, the model makes use of a set of specific statistics for each major type of work (labour coefficients) that 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 years’ 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:

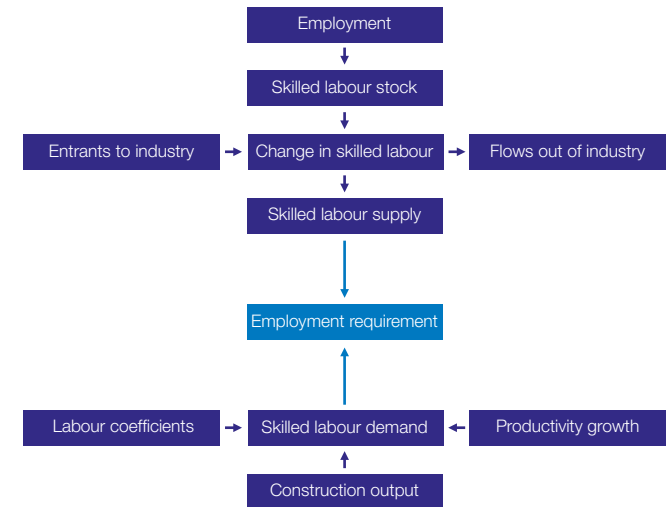
- transfers to other industries
- international/domestic OUT migration
- permanent retirements (including permanently sick)
- outflow to temporarily sick and home duties.

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

Flows into the labour market include:

- transfers in from other industries
- international/domestic IN migration
- inflow from temporarily sick 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.



Source: Experian

Appendix II – Glossary of terms

- **Building envelope specialists** – any trade involved with the external cladding of the building other than bricklaying, e.g. curtain walling.
- **Demand** – construction **output**, vacancies, and a set of **labour coefficients** to translate demand for workers to labour requirements by trade. Demand is calculated using Office for National Statistics (ONS) and the Department of Finance and Personnel Northern Ireland (DFP) output data. Vacancy data are usually taken from the National Employers Skills Survey from the Department for Education and Skills.
- **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.
- **Labour coefficients** – the labour inputs required for various types of construction activity. The number of workers of each occupation/trade to produce £1m of output in each sub-sector.
- **LFS** – Labour Force Survey – a UK household sample survey which collects information on employment, unemployment, flows between sectors and training, from around 53,000 households each quarter (>100,000 people).
- **LMI** – Labour Market Intelligence – data that are quantitative (numerical) or qualitative (insights and perceptions) on workers, employers, wages, conditions of work, etc.
- **Macroeconomics** – the study of an economy on 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 – official statistics on economy, population and society at national UK 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 UK Standard Industrial Classification of Economic Activities produced by the **ONS**.
- ConstructionSkills is responsible for SIC 45 Construction and part of SIC 74.2 Architectural and Engineering activities and related technical consultancy.
- ConstructionSkills shares an interest with SummitSkills in SIC 45.31 Installation of wiring and fittings and SIC 45.33 Plumbing. AssetSkills has a peripheral interest in SIC 74.2.
- **SOC codes** – Standard Occupational Classification codes.
- **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.



Appendix III – Footnotes and footprints

Footnotes

- 1 Except for Northern Ireland, output data for the English regions, Wales and Scotland are 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 to a 2000 constant price basis, i.e. 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 year-on-year 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 45, plumbers and electricians working in contracting are an integral part of the construction process. However, it is recognised by ConstructionSkills that SummitSkills has responsibility for these occupations across a range of SIC codes, including SIC 45.31 and 45.33.

Footprints for Built Environment SSCs

The table summarises the SIC codes covered by ConstructionSkills:

	SIC Code	Description
ConstructionSkills	45.1	Site preparation
	45.2	Building of complete construction or parts; civil engineering
	45.3	Building installations (except 45.31 and 45.33 which are covered by SummitSkills)
	45.4	Building completion
	45.5	Renting of construction or demolition equipment with operator
	74.2†	Architectural and engineering activities and related technical consultancy

The sector footprints for the other SSCs covering the Built Environment:

SummitSkills

Footprint – Plumbing, Heating, Ventilation, Air Conditioning, Refrigeration and Electrotechnical.

Coverage – Building Services Engineering.

ConstructionSkills recognises the responsibility of Summit Skills across Standard Industrial Classifications (SIC) 45.31 and 45.33, thus data relating to the building services engineering sector is included here primarily for completeness.

AssetSkills

Footprint – Property Services, Housing, Facilities Management, Cleaning

Coverage – Property, Housing and Land Managers, Chartered Surveyors, Estimators, Valuers, Home Inspectors, Estate Agents and Auctioneers (property and chattels), Caretakers, Mobile and Machine Operatives, Window Cleaners, Road Sweepers, Cleaners, Domestics, Facilities Managers.

Energy and Utility Skills

Footprint – Electricity, Gas (including gas installers), Water and Waste Management

Coverage – Electricity generation and distribution; Gas transmission, distribution and appliance installation and maintenance; Water collection, purification and distribution; Waste water collection and processing; Waste Management.

† AssetSkills has a peripheral interest in SIC 74.2

Appendix IV – Occupational groups

Occupational group

Description, SOC reference.

Senior, executive and business process managers

Directors and chief executives of major organisations, 1112
 Senior officials in local government, 1113
 Financial managers and chartered secretaries, 1131
 Marketing and sales managers, 1132
 Purchasing managers, 1133
 Advertising and public relations managers, 1134
 Personnel, training and Industrial relations managers, 1135
 Office managers, 1152
 Civil service executive officers, 4111
 Property, housing and land managers, 1231
 Information and communication technology managers, 1136
 Research and development managers, 1137
 Customer care managers, 1142
 Storage and warehouse managers, 1162
 Security managers, 1174
 Natural environment and conservation managers, 1212
 Managers and proprietors in other services nec, 1239

Construction managers

Production, works and maintenance managers, 1121
 Managers in construction, 1122
 Quality assurance managers, 1141
 Transport and distribution managers, 1161
 Recycling and refuse disposal managers, 1235
 Managers in mining and energy, 1123
 Occupational hygienists and safety officers (H&S), 3567
 Conservation and environmental protection officers, 3551

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

IT operations technicians, 3131
 IT user support technicians, 3132
 Estimators, valuers and assessors, 3531
 Finance and investment analysts/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 factories, utilities and trading standards, 3565
 Software professionals, 2132
 IT strategy and planning professionals, 2131
 Estate agents, auctioneers, 3544
 Solicitors and lawyers, judges and coroners, 2411
 Legal professionals nec*, 2419
 Chartered and certified accountants, 2421
 Management accountants, 2422

Management consultants, actuaries, economists and statisticians, 2423
 Receptionists, 4216
 Typists, 4217
 Sales representatives, 3542
 Civil Service administrative officers and assistants, 4112
 Local government clerical officers and assistants, 4113
 Accounts and wages clerks, book-keepers, other financial clerks, 4122
 Filing and other records assistants/clerks, 4131
 Stock control clerks, 4133
 Database assistants/clerks, 4136
 Telephonists, 4141
 Communication operators, 4142
 General office assistants/clerks, 4150
 Personal assistants and other secretaries, 4215
 Sales and retail assistants, 7111
 Telephone salespersons, 7113
 Buyers and purchasing officers (50%), 3541
 Marketing associate professionals, 3543
 Personnel and Industrial relations officers, 3562
 Credit controllers, 4121
 Market research interviewers, 4137
 Company secretaries (excluding qualified chartered secretaries), 4214
 Sales related occupations nec*, 7129
 Call centre agents/operators, 7211
 Customer care occupations, 7212
 Elementary office occupations nec*, 9219

Wood trades and interior fit-out

Carpenters and joiners, 5315

Pattern makers, 5493

Paper and wood machine operatives, 8121

Furniture makers, other craft woodworkers, 5492

Labourers in building and woodworking trades (9%), 9121

Construction trades nec* (25%), 5319

Bricklayers

Bricklayers, masons, 5312

Building envelope specialists

Construction trades nec* (50%), 5319

Labourers in building and woodworking trades (5%), 9121

Painters and decorators

Painters and decorators, 5323

Construction trades nec* (5%), 5319

Plasterers and dry liners

Plasterers, 5321

Roofers

Roofers, roof tilers and slaters, 5313

Floorers

Floorers and wall tilers, 5322

Glaziers

Glaziers, window fabricators and fitters, 5316

Construction trades nec* (5%), 5319



Specialist building operatives nec*

Construction operatives nec* (80%), 8149
Construction trades nec* (5%), 5319
Industrial cleaning process occupations, 9132

Scaffolders

Scaffolders, staggers, riggers, 8141

Plant operatives

Crane drivers, 8221
Plant and machine operatives nec*, 8129
Transport operatives nec*, 8219
Fork-lift truck drivers, 8222
Mobile machine drivers and operatives nec*, 8229
Agricultural machinery drivers, 8223

Plant mechanics/fitters

Metal working production and maintenance fitters, 5223
Precision instrument makers and repairers, 5224
Motor mechanics, auto engineers, 5231
Labourers in process and plant operations nec*, 9139
Tool makers, tool fitters and markers-out, 5222
Vehicle body builders and repairers, 5232
Auto electricians, 5233
Vehicle spray painters, 5234
Goldsmiths, silversmiths, precious stone workers, 5495
Tyre, exhaust and windscreen fitters, 8135

Steel erectors/structural

Steel erectors, 5311
Welding trades, 5215
Sheet metal workers, 5213
Metal plate workers, shipwrights and riveters, 5214
Construction trades nec* (5%), 5319
Smiths and forge workers, 5211
Moulders, core makers, die casters, 5212
Metal machining setters and setter-operators, 5221

Labourers nec*

Labourers in building and woodworking trades (80%), 9121

Electrical trades and installation

Electricians, electrical fitters, 5241
Electrical/electronic engineers nec*, 5249
Telecommunications engineers, 5242
Lines repairers and cable jointers, 5243
TV, video and audio engineers, 5244
Computer engineers, installation and maintenance, 5245



Scottish Parliament Building, Edinburgh

Plumbing and heating, ventilation, and air conditioning trades

Plumbers and HVAC trades, 5314

Pipe fitters, 5216

Labourers in building and woodworking trades (6%), 9121

Construction trades nec* (5%), 5319

Logistics

Heavy goods vehicle drivers, 8211

Van drivers, 8212

Packers, bottlers, canners, fillers, 9134

Other goods handling and storage occupations nec*, 9149

Buyers and purchasing officers (50%), 3541

Transport and distribution clerks, 4134

Security guards and related occupations, 9241

Civil engineering operatives nec*

Road construction operatives, 8142

Rail construction and maintenance operatives, 8143

Quarry workers and related operatives, 8123

Construction operatives nec* (20%), 8149

Labourers in other construction trades nec*, 9129

Non-construction operatives

Metal making and treating process operatives, 8117

Process operatives nec*, 8119

Metal working machine operatives, 8125

Water and sewerage plant operatives, 8126

Assemblers (vehicle and metal goods), 8132

Routine inspectors and testers, 8133

Assemblers and routine operatives nec*, 8139

Stevedores, dockers and slingers, 9141

Hand craft occupations nec*, 5499

Elementary security occupations nec*, 9249

Cleaners, domestics, 9233

Road sweepers, 9232

Gardeners and groundsmen, 5113

Caretakers, 6232

Civil engineers

Civil engineers, 2121

Other construction professionals and technical staff

Mechanical engineers, 2122

Electrical engineers, 2123

Chemical engineers, 2125

Design and development engineers, 2126

Production and process engineers, 2127

Planning and quality control engineers, 2128

Engineering professional nec*, 2129

Electrical/electronic technicians, 3112

Engineering technicians, 3113

Building and civil engineering technicians, 3114

Science and engineering technicians nec*, 3119

Architectural technologists and town planning technicians, 3121

Draughtspersons, 3122

Quality assurance technicians, 3115

Town planners, 2432

Electronics engineers, 2124

Building inspectors, 3123

Scientific researchers, 2321

Architects

Architects, 2431

Surveyors

Quantity surveyors, 2433

Chartered surveyors (not Quantity surveyors), 2434

Appendix V – CSN website and contact details

The CSN website – <http://www.cskills.org/csn>

The CSN website functions as a **public gateway** for people wishing to access the range of **Labour Market Intelligence (LMI)** reports and **research material** regularly produced by the CSN.

The main UK report, along with the twelve LMI reports (one for Northern Ireland, Scotland, Wales and each of the nine English regions) can be downloaded from the site, while research reports such as the '2020Vision' and 'Closer look at Greater London' are also freely available.



Having access to this range of labour market intelligence and trend insight allows industry, government, regional agencies and key stakeholders to:

- pinpoint the associated, specific, skills that will be needed year by year
- identify the sectors which are likely to be the strongest drivers of output growth in each region and devolved nation
- track the macro economy
- understand how economic events impact on regional and devolved nations economic performance
- highlight trends across the industry such as national and regional shifts in demand
- plan ahead and address the skills needs of a traditionally mobile workforce
- understand the levels of qualified and competent new entrants required into the workforce.

The website also contains further information about:

- how the CSN functions
- the CSN Model approach
- how the Model can be used to explore scenarios
- CSN team contact information
- access to related ConstructionSkills research
- details for those interested in becoming members of the network.

The CSN website can be found at:

<http://www.cskills.org/csn>

CSN Members Area

While the public area of the CSN Website is the gateway to the completed LMI and research reports, being a member of the CSN offers further benefits.

As a CSN member you will be linked to one of the Observatory groups, which play a vital role in being able to feed back observations, knowledge and insight on what is really happening on the ground in every UK region and nation. This feedback is used to fine tune the assumptions and data that goes into the forecasting programme such as:

- details of specific projects
- demand within various types of work or sectors
- labour supply
- inflows and outflows across the regions and devolved nations.

CSN Members therefore have:

- early access to forecasts
- the opportunity to influence and inform the data
- the ability to request scenarios that could address “What would happen if...” types of questions using the model.

Through the Members area of the CSN website, members can:

- access observatory related material such as meeting dates, agendas, presentations and notes
- access sub-regional LMI reports
- download additional research material
- comment/feedback to the CSN Team.

As the Observatory groups highlight the real issues faced by the industry in the UK, we can more efficiently and effectively plan our response to skills needs. If you would like to contribute your industry observations, knowledge and insight to this process and become a member of the CSN, we would be delighted to hear from you.

Contact details

For further information about the CSN website, or to register your interest in joining the CSN as a member, please contact us at: **csn@cskills.org**

For enquiries relating to the work of the CSN, please contact Sandra Lilley, CSN Manager, at: **sandra.lilley@cskills.org**



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