Sector Skills Assessment for the Construction Sector 2010

ConstructionSkills Scotland Report

ConstructionSkills Research

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1. Introduction

ConstructionSkills is the Sector Skills Council (SSC) for construction. As a partnership between CITB-ConstructionSkills, the Construction Industry Council and CITB-Northern Ireland, it covers the construction sector from planning and design through to construction and maintenance, and represents occupations from crafts through to building professionals.

This report describes the current and future skills priorities for the construction sector, demonstrating the contribution that construction makes to the economy and highlighting priorities and potential barriers to growth. It is built on a well-respected research programme and work with the sector over a long period, drawing on research and analysis undertaken by ConstructionSkills since 2005 and a range of secondary sources, with particular emphasis on research and forecasting conducted over the past 12 months.

The combined analysis provides a rationale for adopting agreed priorities for action and a basis for bringing about change in the way the sector goes about developing its workforce.

This report for Scotland follows the same format at the main UK Sector Skills Assessment, however it has a more focused look on what is driving change in skills demand and employment, both now and in the future, for the Scottish construction industry. This report is one of a series with other reports being available for England, Northern Ireland and Wales in addition to the main UK report.

1.1 Current and Future Skills Priorities

As highlighted in the main UK report, construction is an important sector across each nation and ConstructionSkills has a leading role to play in unlocking the talent of individuals and improving the performance of construction firms and professional consultancies.

In the short-term the challenge is to respond to the recession and the ongoing pressure to survive, however long term skills planning is essential to ensure future growth.

Looking forward ConstructionSkills has identified four key themes that must be addressed if industry is to successfully operate in the current environment and exploit new and emerging opportunities:

Attracting and Retaining Talent
➢ Promoting careers in construction. ➢ Supporting vocational and sector specific qualifications in schools, colleges and universities. ➢ Encouraging recruitment from a more diverse pool of talent. ➢ Assisting retention by providing employers and employees with appropriate support.
Developing Talent
➢ Promoting lifelong learning as an aid to achieving qualifications, career progression and continuous professional development. ➢ Improving health and safety knowledge and behaviours. ➢ Support evolving professional and specialist skills needs associated with sustainability, low carbon building and innovative construction.

Improving Business Performance
➢ Increasing employer investment in training and development to improve productivity. ➢ Improving supervisory, management and leadership skills. ➢ Promoting integration and collaborative working in the industry. ➢ Encouraging clients to invest in the construction skills base through best practice procurement.
Strengthening the Skills Infrastructure
➢ Developing project based training across the nations in support of major construction projects. ➢ Implementing the Construction Qualifications Strategy to ensure qualifications meet the needs of employers and learners. ➢ Providing authoritative national labour market intelligence. ➢ Responding to the specific needs of the construction industry in the nations. ➢ Influencing skills and training policies and funding to ensure that they are fit for purpose for the construction industry. ➢ Collaborating with employers and their representative bodies, professional institutions, trade unions, delivery partners and other Sector Skills Councils to develop an integrated approach.

2. What are the factors driving the demand for skills?

2.1 What Drives Skills Demand?

2.1.1 Contribution of the Sector

ConstructionSkills covers a wide range of activities in terms of the planning, design, construction and maintenance of the built environment, otherwise known as an SSC's footprint. Appendix 10.1 and 10.2 provide a full description of ConstructionSkills' footprint, defined by both SIC 2003 and SIC 2007 classifications.

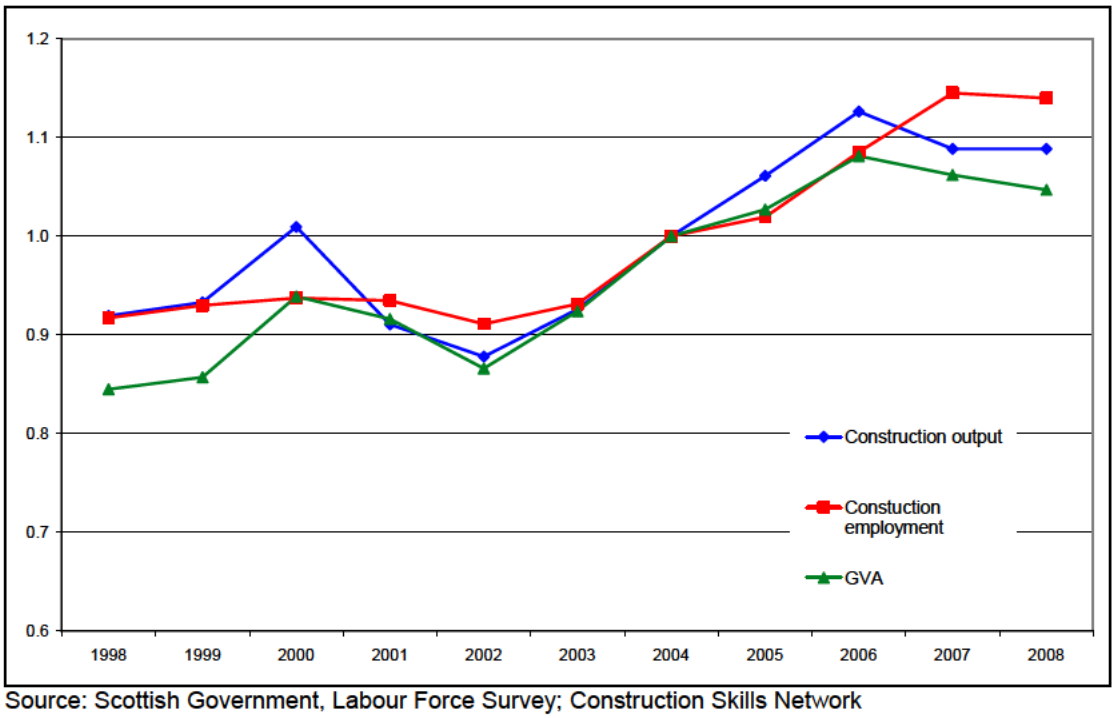
Construction is a pre-requisite to all other economic activity and forms a significant part of the UK and Scottish economy in terms of employment and wealth generation. At a UK level the sector is the UK's second largest employer and a significant exporter of goods and services.

Employing 2.35[1] million people the combined employment of construction workers and professionals account for over 8% of the UK workforce, and with an output in 2009 of £97billion (at constant 2005 prices)[2] the sector contributes approximately 8.5% of the UK's GDP.

For Scotland in 2009 the sector employed just over 230,000 workers and professionals with an estimated output of nearly £8.2billion, at constant 2005 prices. This means Scotland's share of the UK's overall construction workforce is 9.8%, and it is responsible for generating 8.4% of construction output.

Chart 1 below shows how changes in construction output, employment and Gross Value Added (GVA) for Scotland have been quite closely linked over recent years. This supports the view that construction is a good barometer of the wider economy and that future output and employment will be heavily influenced by the performance of the Scottish economy.

Chart 1 – Index (2004 basis) of Construction Output, employment and GVA: Scotland 1998–2008



Source: Scottish Government, Labour Force Survey; Construction Skills Network

[1] Office for National Statistics, Labour Force Survey, Spring 2009
[2] Construction Skills Network Model; Experian

From 1998 to 2008 the employment trend has been for growth apart from a slight dip in 2002, as a result of the falling output and GVA shown between 2000 and 2002. This dip highlights the differences that can occur across areas of the UK as comparable figures at a UK level show a constant increase in construction output and employment.

2.1.2 Structure of the Sector

Across the UK a feature of the sector is that there are a small number of large firms and a long tail of small and micro firms. This pattern is replicated in Scotland where there are approximately 23,380[3] enterprises[4] with 90% employing less than 10 employees. Less than 1% of sector enterprises employ more than 250 people, although these firms will carry out a disproportionate share of the work by value.

Table 1 - Employment within ConstructionSkills' Footprint (SIC 2007), Scotland: 2009

Size of Enterprise (Number of Employees)	Enterprises	
	Number	**Percent**
0-9	21,251	90.9%
10-49	1,783	7.6%
50-249	306	1.3%
250+	40	0.2%
Total	**23,380**	**100%**

Source: Office for National Statistics, UK Business - Activity, Size and Location 2009.
Note: Analysis uses SIC 2007. Construction is defined by ConstructionSkills' footprint. This includes Architectural and engineering activities and other professional, scientific and technical activities. SIC 74.90/9 other professional, scientific and technical activities (not including environmental consultancy or quantity surveying) is included because analysis is unavailable below the 4 digit level. SIC 74.90/9 is not part of ConstructionSkills' footprint.

The construction sector is also characterised by significant levels of self-employment, at UK level around 37% of workers within the industry are self employed[5]. There is also a tendency for career progression to lead towards self-employment, particularly in the main construction trades. However Scotland had some significant differences;

- the level of self employment is noticeably lower within the Scottish construction industry, at 21%[6]
- levels of continuous employment in the industry are higher, at 89% against the UK figure of 79%[7]
- over three quarters of contractors (78%), said it was 'easy' or 'quite easy' to retain good trades/craftspeople as employees
- around half the firms are able to retain former apprentices for four years or more.

The relatively low levels of self-employment and higher level of continuous employment in Scotland are possibly related to the employment and training structure, which is dominated by direct employment and promotes apprenticeships and the retention of trainees.

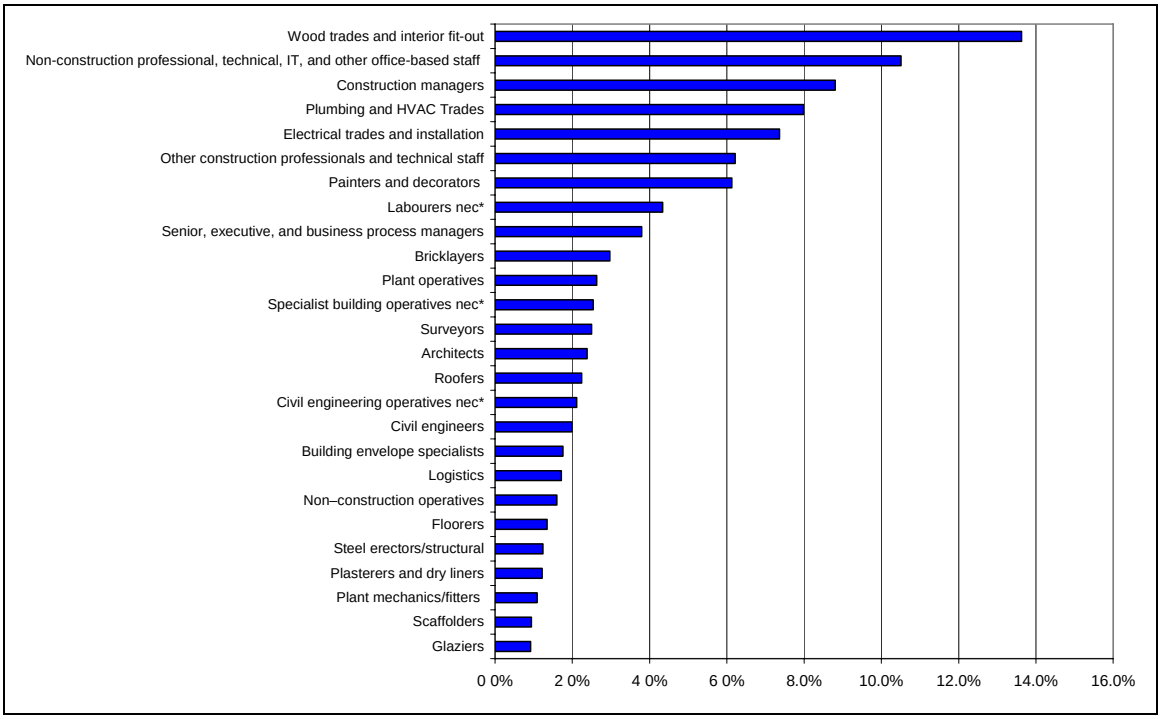
Although the research into employment patterns was conducted prior to the full effects of the recession, it does show a different employment pattern when compared to other areas of the UK, especially when other aspects such as demographics and gender are in line with the UK view.

[3] Office for National Statistics, UK Business - Activity, Size and Location 2009
[4] Based on VAT trader and PAYE employer information.
[5] Office for National Statistics, Labour Force Survey, Spring 2009
[6] Office for National Statistics, Labour Force Survey, Spring 2009
[7] ConstructionSkills and Central Office of Information, Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007

2.1.3 Employment Characteristics

In terms of occupational structure, Chart 2 below gives a breakdown using the Construction Skills Network occupational groups.

Chart 2 - Construction Employment by Occupation, Scotland: 2008

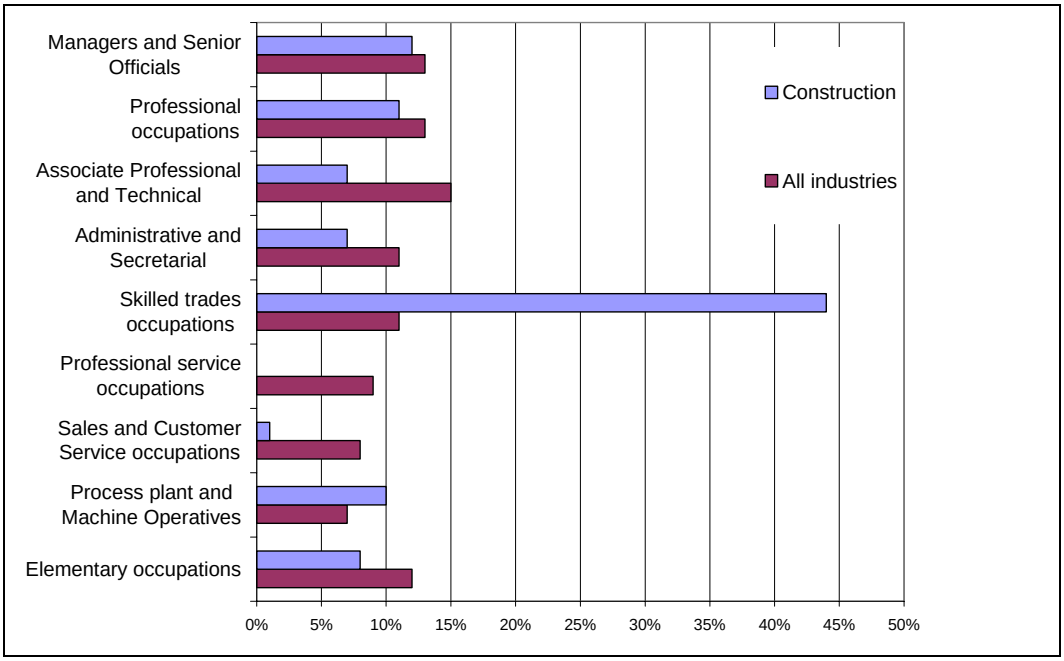


Source: Construction Skills Network Model; Experian

Wood trades and interior fit out is the largest occupational group accounting for nearly 14% of industry employment and higher than the UK level of just over 11%.

Another way of looking at employment characteristics is by broad occupational classifications such as Managers and Senior Officials, Professional occupations, Skilled trades occupations and the like. Chart 3 shows a breakdown of employees by occupation for construction against all industries in Scotland.

Chart 3 – Employees by occupation, Construction v All industries, Scotland, 2007



Source: Alliance of Sector Skills Councils, Annual Population Survey 2007

Both Chart 2 and Chart 3 clearly show the importance of skilled trades to the Scottish construction industry with 44% of employees coming from skilled trades occupations, significantly higher than other industries (11%).

The project-by-project nature of work in the construction sector means that the industry will draw in significant numbers of workers, usually on a sub-contracted basis. These are likely to be from other parts of the country, or abroad. Indeed, research indicates that the UK construction workforce is very mobile with just over half of workers (54%) having worked on sites outside the current nation/region and for one in five, half or less of their time has been spent working on sites in their current nation/region[8].

By contrast those working in Scotland were particularly likely to have spent all their time in construction within the country (68%)..

Table 2 - Proportion of construction career spent in current nation: 2007

	Scotland %	UK %
All of it	68	43
Most of it	18	33
Around half	5	9
Small proportion	6	8
Only this job	2	3
Don't know	-	3

Source: ConstructionSkills Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007

2.1.4 Recruitment and Retention

Despite its reputation as a physically demanding industry, construction requires an increasingly diverse, highly skilled and adaptable workforce. This applies across the full range of occupations.

The sector has traditionally suffered from an unfortunate image in terms of relatively low pay, poor working environment and little job security, particularly in respect of craft and operative roles. Such perceptions have made it difficult for employers to attract talent. However, in terms of relative pay, wages for manual and non-manual occupations are above the national average.

The construction industry is notoriously cyclical and very sensitive to changes in the macro-economy. This is reflected in workforce flows. The construction industry has at times of recession lost significant numbers of workers, many of whom do not return. The ageing workforce both for manuals and non-manuals can partly be attributed to redundancies during the early-1990s and then subsequent difficulties in attracting workers back into the sector.

Indeed, there is now a very real risk that the outflow of skilled workers through redundancy and the natural flow to other sectors will adversely impact on the recovery when it eventually comes.

[8] ConstructionSkills and Central Office of Information, Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007

2.2 Current Performance - What is Driving Change?

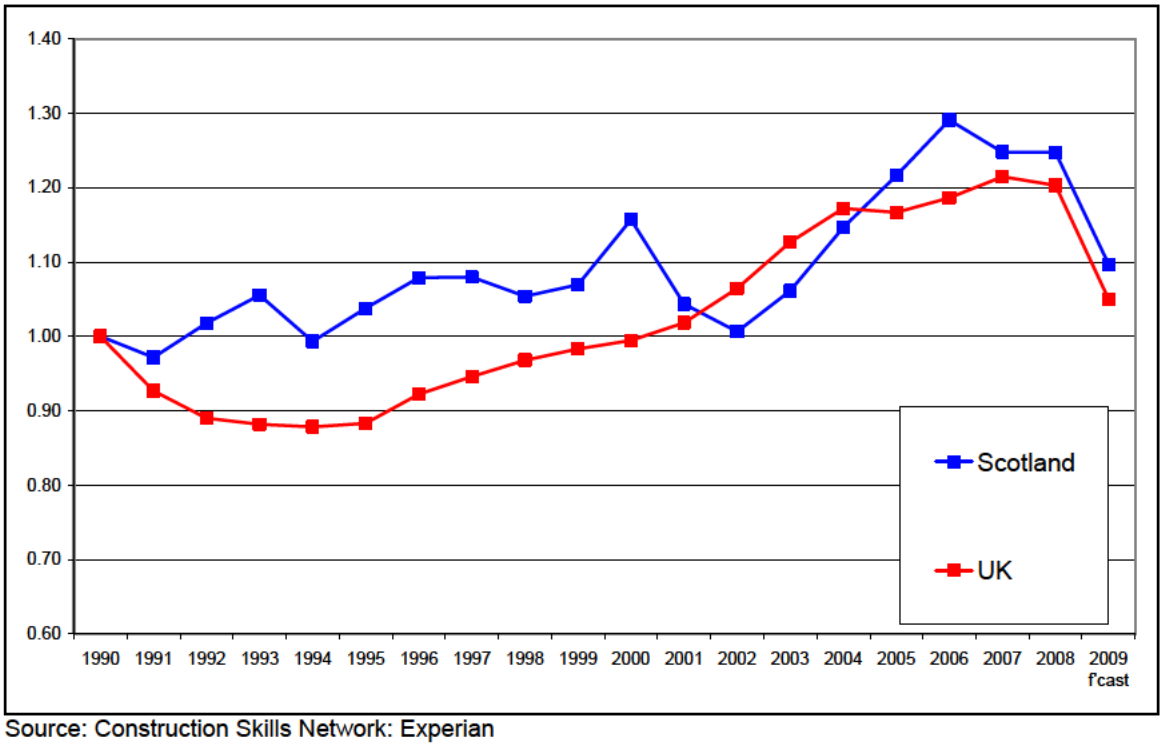
2.2.1 The Economy

As touched on earlier, the Scottish economy will be the prime driver for change across the sector with demand for good quality housing, hospitals, schools, commercial premises, roads and infrastructure characterising growth over the last five years. However the recent recession has had a severe impact upon the UK construction industry that Scotland has not been immune from.

The UK economy has proved one of the most exposed to the debt crisis and according to the Organisation for Economic Co-operation and Development (OECD) is likely to suffer one of the worst contractions among the major European economies.

Scotland entered a technical recession slightly later than other areas of the UK[9] although this did not prevent output dropping by a similar level to the UK. However as Chart 4 below shows, apart from a short period between 2001 and 2004, construction output in Scotland has consistently shown growth above UK levels.

Chart 4 – Index (1990) of Construction output, Scotland v UK: 1990 – 2009

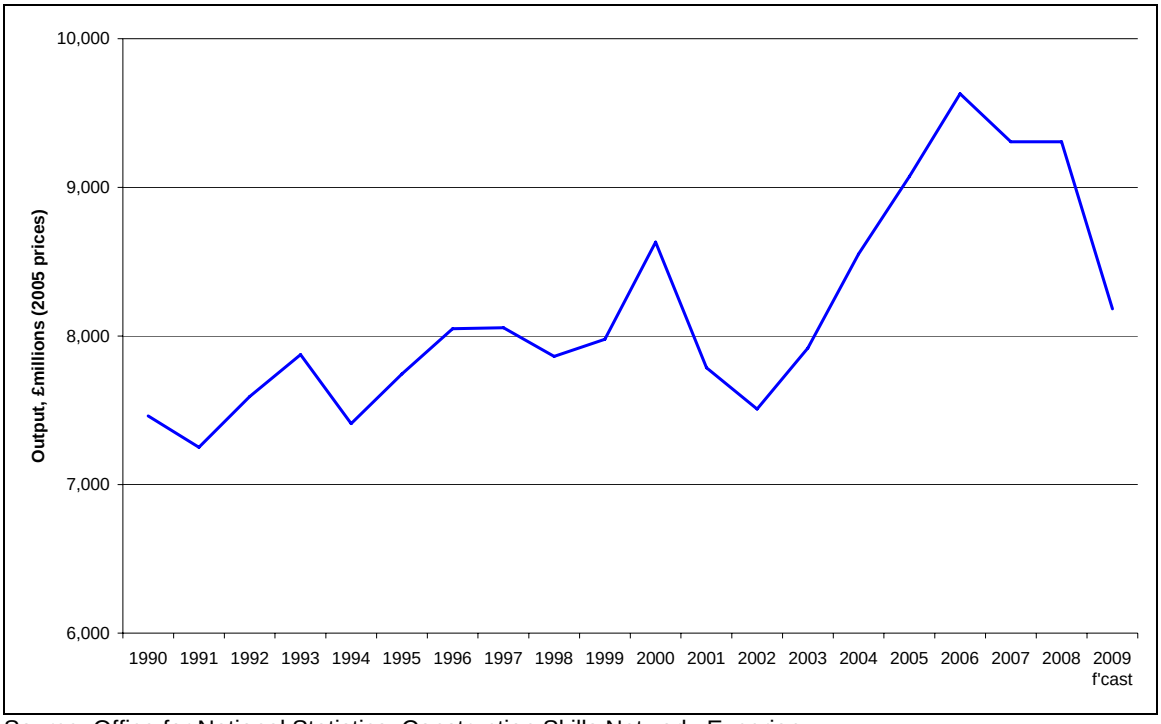


Source: Construction Skills Network: Experian

This better performance will have helped the sector in Scotland, although it has undoubtedly felt the full effect of the worst contraction in the industry for over 30 years. Chart 5 shows how dramatic the fall of construction output for Scotland in 2009 is forecast to be, though as mentioned earlier it will be at a similar level to that of the UK with a drop of around 12% to 13%[10]. It is evident that the speed and depth of the contraction has been without precedent catching out a lot of businesses, particularly in terms of planning in the face of reduced workloads, late payments, increased competition for work, credit availability and credit insurance.

[9] Construction News, April 2009
[10] ConstructionSkills and Experian, Construction Skills Network, 2009

Chart 5 - Construction Output in £m (2005 prices), Scotland: 1990-2009



Source: Office for National Statistics; Construction Skills Network; Experian

Whilst recent events in the economy such as the credit crunch and recession have changed the short-term picture for construction, the long-term trend is for rising levels of construction activity, which will continue to present career opportunities.

Whilst construction workforce levels across the UK have generally been buoyant over the past 15 years with strong demand for trades people, professional and technical occupations and management roles the performance of the sector has been severely impacted by the recession, which has been reflected in severe job losses.

Data from the Construction Skills Network shows that construction employment in Scotland started to fall in 2008, albeit by less than 1%. However forecasts show a much larger decline of around 9% in 2009, which is slightly lower than the UK figure for a 13% fall in employment.

2.2.2 Current Activity

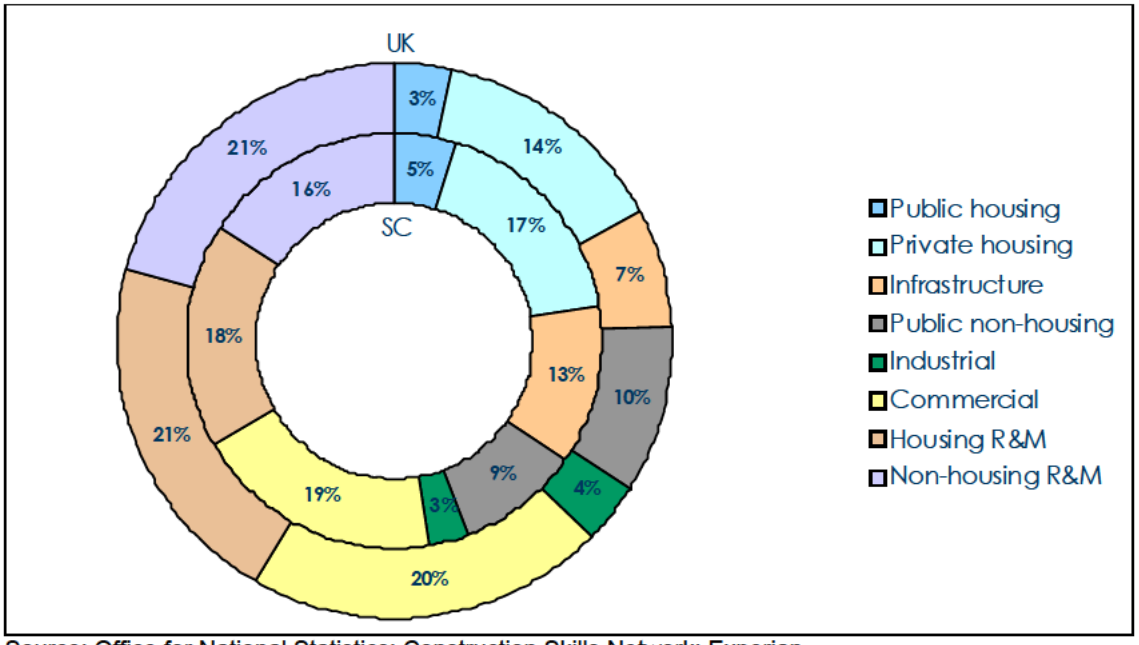
Despite the recession the construction industry contributes approximately 6.5% of Scotland's GVA[11], slightly lower than the UK value of 8.5% of GDP[12].

Chart 7 shows how the structure of the industry in Scotland compares to the UK and there are some notable differences.

Public housing and private housing work represent a larger share of construction output in Scotland, while housing and non-housing repair and maintenance (R&M) work represents a smaller share when compared to the UK.

[11] Scottish Government
[12] Construction Skills Network, Experian

Chart 7 – Construction industry structure, UK v Scotland (SC), 2008



Source: Office for National Statistics; Construction Skills Network; Experian

The main difference is infrastructure work, which in Scotland, is nearly double the UK level. Scotland has benefited from some major infrastructure projects such as work on the M74 and M80, along with the Edinburgh tram scheme. These major infrastructure projects have helped to keep construction output high in this sector and with some major energy projects and the Forth Replacement Crossing being planned for the future, infrastructure work looks set to remain an important sector for Scotland, bucking the recessionary trend seen across other sectors.

As Table 3 shows, commercial and housing in Scotland has suffered most as a result of the downturn with significant drops in orders[13]. Combined, both of these sectors represent nearly half of new orders placed in Scotland during 2008. Industrial orders have also been significantly effected, however the sectors proportion of new orders is far lower, at around 13% in 2008. Forecasts for 2009 orders show a similar pattern with orders in these three sectors being further hit by the recession. At the moment, it is difficult to see what will stimulate growth in the private housing sector other than banks returning to more normal lending patterns. Recent falls in interest rates are unlikely to boost housing demand in the short-term, as it is no longer the size of the monthly bill that is the problem in obtaining mortgage finance but the size of the deposit required.

Table 3 – New work construction orders, Scotland, 2004 – 2008 (current prices)

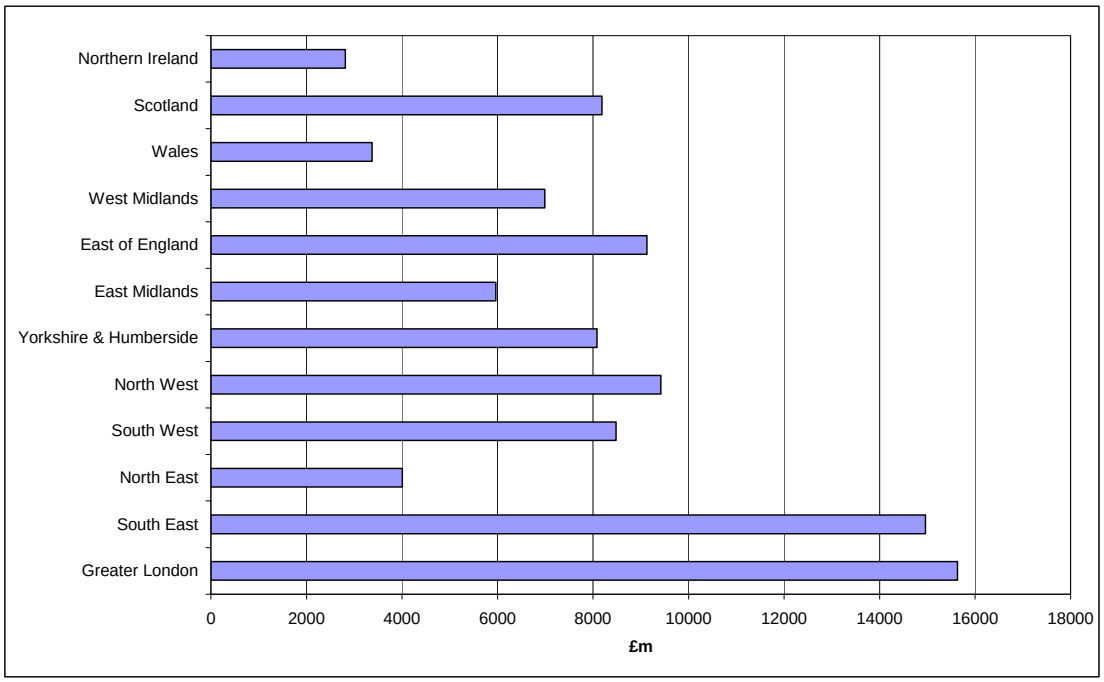
	Actual	Annual % change				
	2008	2004	2005	2006	2007	2008
Public housing	354.8	15.2	-0.5	31.6	20.4	14.3
Private housing	995.8	38.2	3.2	-23.3	3.7	-25.6
Infrastructure	986.5	-4.4	-8.3	-5.1	41.0	55.8
Public non-housing	671.9	-18.0	47.9	-9.5	-7.3	-2.1
Industrial	186.6	6.7	48.4	6.4	-10.1	-17.3
Commercial	939.0	38.5	7.6	73.7	-14.8	-37.9
Total new work	4134.7	17.8	10.5	7.6	-1.2	-12.2

Source: Construction Skills Network, Experian

[13] Construction Skills Network, Experian

In terms of where Scotland ranks for construction output compared to other areas of the UK, Chart 8 shows that for 2009 it is forecast to be 6th out of 12 (the three devolved nations and nine English regions), with output very close to the UK average value of £8.1billion (2005 constant prices). Looking back over the last ten years, Scotland has remained in a mid table position, while Greater London and the South East of England have remained the two regions with the largest output.

Chart 8 - Construction Output by Country and Region in £m (2005 constant prices), United Kingdom: 2009



Source: Construction Skills Network; Experian
Note: 2009 is an estimate

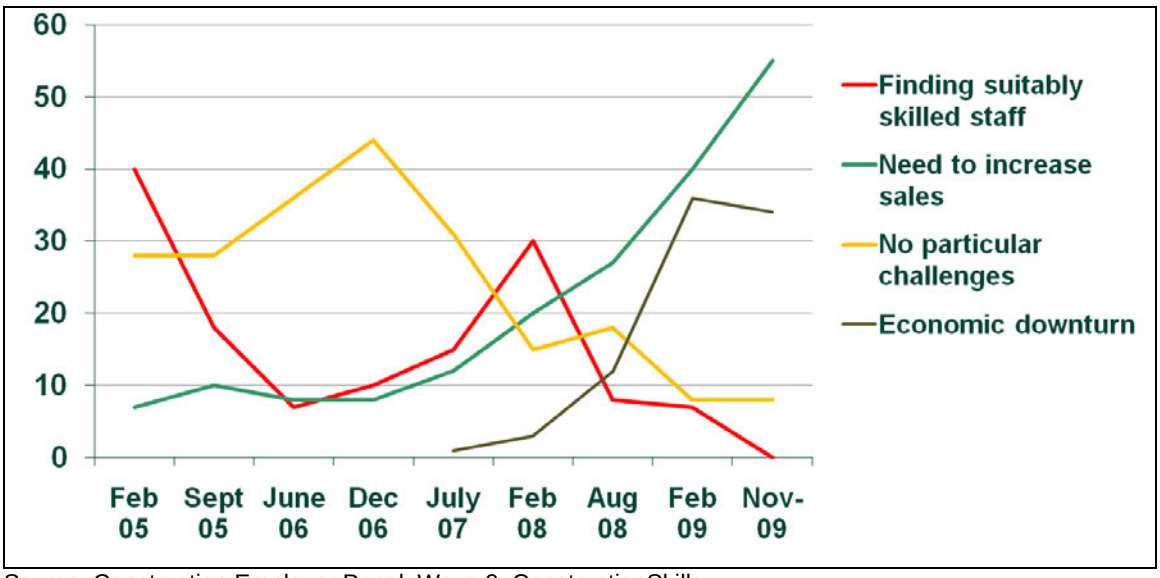
2.2.3 Constraints on Activity

The volume of construction activity, even at a UK level for construction is highly cyclic and there are also significant in-year variation with seasonal peaks and troughs corresponding to external constraints such as lack of demand, labour shortages, poor weather and materials shortages. For Scotland and the UK, this means construction is highly seasonal in terms of activity and employment.

Recent research carried out by ConstructionSkills examined the constraints on activity that reported by firms across the sector; results for Scotland are shown in Chart 9. Naturally with the recession the proportion of firms reporting lack of demand has increased significantly since October 2007, with over 50% of firms citing the need to increase sales as a constraint in October 2009. As demand has tailed off this has created excess capacity and all but removed labour constraints, which now affect only 1% to 2% of firms[14].

[14] Construction Forecasting and Research, IFF, November 2009

Chart 9 - Constraints on activity, Scotland: 2005 to 2009



Source: Construction Employer Panel, Wave 9, ConstructionSkills

Similarly results recently reported by the Alliance of Sector Skills Councils, Scotland[15] showed that cash flow and the economic downturn were the main challenges anticipated over the next 12 months and for construction this was more of a concern than for other industries in Scotland. Interestingly, 10% of employers saw attracting appropriately skilled staff as a challenge and as this data was taken from the Scottish Employer Skills Survey 2008, this supports the findings of ConstructionSkills' research covering the same period, as shown in Chart 9.

2.2.4 Geography and Mobility

The geography of Scotland presents a unique challenge in the UK, particularly in respect of workforce mobility[16].

- Scotland covers over 30,000 square miles of land
- In area terms Scotland is 30% of the UK land area
- Has over 6,000 miles of coastline
- Has nearly 800 islands and archipelagos[17].
- Scotland has 60% of the UK coastline and also accounts for 8% of the European coastline
- Scotland has less than 10% of the UK population.
- Rural Scotland covers 95% of Scotland's land mass and only 21% of the population.

This means Scotland's geography is very different from other areas of the UK and poses some unique challenges, however it also provides some advantages.

The coastline of Scotland is one reason why it is ideally placed to take advantage of wind, wave and tidal power generation technology as it has some significant natural advantages that would open up sites for possible development. The Scottish Government has recognised this potential and has committed to producing 50% of Scotland's electricity by renewable sources by 2020, a target that it is making significant progress towards achieving. In addition as the power generation sites are being located in remote locations, Scotland has also developed Europe's first SMART grid.

There are three main regions within Scotland;

- Highlands and Islands

[15] Alliance of Sector Skills Councils, Scotland, Construction Scottish Sector Profile, 2009
[16] ConstructionSkills, Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, Overall Report September 2007
[17] Wikipedia, http://en.wikipedia.org/wiki/Geography_of_Scotland

- Central Lowlands
- Southern Uplands

Also, in terms of GVA, there is a strong correlation with the major population centres that are mainly in the Central Lowlands area, however there are regional differences. There is a strong centre of GVA located in the Highlands and Islands, especially around Aberdeen where the oil and gas industry makes a significant contribution.

Given the wide geographic area Scotland covers and low population density, the mobility of the workforce is an important consideration. Research has shown that Scotland has one of the highest patterns of workers who originate from, reside in and work within the construction industry[18]. In fact Scotland had the highest figure (68%) for workers who were likely to have spent all their time working within Scotland, significantly higher than the national average (43%).

With the wide geographic area and remoteness of large areas, you reasonably expect longer travelling times to be evident for the Scottish construction workforce, however this does not appear to be the case. When looking at travel to work distances Scottish workers were likely to travel more for shorter distances of less than 25 miles, however less likely to travel longer distances of more than 50 miles or more. This seems to indicate that although Scotland covers a very large area, in the past it has been able to draw on a pool of construction workers who also live across this area, with low levels of long distance travel.

2.2.5 Technology

New technologies and innovations are generally adopted if, and only if, there is a sympathetic set of business, legislative or cultural conditions. An inadvertent benefit of the current recession is that it may provide the catalyst for innovation within the construction industry at both a UK and Scotland level.

A sustained period of strong demand for construction has resulted in relatively low levels of innovation. However, significant exposure to the economic crisis, along with increased regulation and growing market pressure, means that the construction industry must now seriously consider technology in order to meet its customers' and regulatory expectations.

Approaching a third (31%) of companies questioned on ConstructionSkills' Employer Panel had laid staff off because of the recession and a similar proportion (33%) had also expanded into different parts of the market or changed the focus of their work in response to the recession[19]. Firms that had expanded into different parts of the market or changed the focus of their work reported requiring new skills, particularly in IT and management.

In terms of recovery there will be a renewed emphasis on ensuring efficient working which will be of particular interest for the Scottish construction industry as the Scottish Government looks to raise productivity. The long-term ambition to drive up productivity is expected to facilitate and be facilitated by increased technological change, which will in turn transform some occupations in respect of both the numbers required and the activities undertaken.

Over the past decade significant developments have occurred in the prefabrication of structures and components, the standardisation of production, the development and application of new (and out-of-sector materials) and the better integration of information technology in the business and construction process.

[18] Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, ConstructionSkills, 2007

[19] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 8), June 2009

The shift towards off-site manufacturing is likely to mean that on-site construction increasingly becomes more of an assembly process, suggesting that the industry will see a move from construction to fitting. Prefabricated components and assemblies, designed for ease of installation as well as improved performance and cost, will enable greater output from a potentially smaller workforce and increase safety. Whilst this has a particular significance for both manual and non-manual occupations, the implications for manual occupations are probably more telling. This is because their size and scope encompass such diverse occupations and, secondly, their skills and training are built around clearly demarcated craft traditions with a largely bespoke approach to construction.

The future trend towards prefabrication will increasingly see trades move to a factory environment; a move that whilst creating clean and safe working conditions will be resisted by some. This signals a debate on where the workforce will come from to produce components – the construction sector or the manufacturing sector – and what skills they will need.

If it is the construction sector, as anticipated/proposed, this will inevitably result in the erosion and revision of some traditional trade boundaries and the introduction of a more generalist or multi-skilled approach to the construction process. Whilst current off-site technology certainly draws upon traditional craft skills, a factory-based approach, as employed in the manufacturing sector, will probably result in operatives performing tasks that would traditionally be associated with other trades. It will also require new skills of quality control in production and working to increased tolerances on-site, particularly as the approach becomes more mechanised. In this respect, technological change will offer the opportunity to redefine a number of existing roles within the industry, as well as offering opportunities in new areas.

Growth in prefabrication also has particular consequences for the non-manuals as the supply chain broadens and integration between design and production increases. Architects and designers will need to work more closely with suppliers and contractors to integrate new materials into the design. Construction managers will need to make more use of information technology to schedule work, and will require the necessary interpersonal and business skills to enable collaborative working amongst multi-disciplinary teams. It is also reasonable to assume that a greater need for enhanced logistical skills will almost certainly become apparent as more and more components are brought to site.

The site assembly of prefabricated elements will generally require a more stringent approach to quality and a greater understanding of the construction process as a whole. Logistics and planning will become more crucial, as will transport and handling, as time is compressed and individual operations become more critical.

The use of materials and products from other industries may see a crossover of employees bringing a new range of skills and knowledge into construction. As systems become more complex, there may be a move towards ultra-specialisation in niche markets. Indeed, accompanying the more generalist approach to construction is another more specialist approach, which sees the consolidation of very specific skills into relatively small occupations. Both approaches represent the industry's need to increase productivity, but have very different implications for the workforce development.

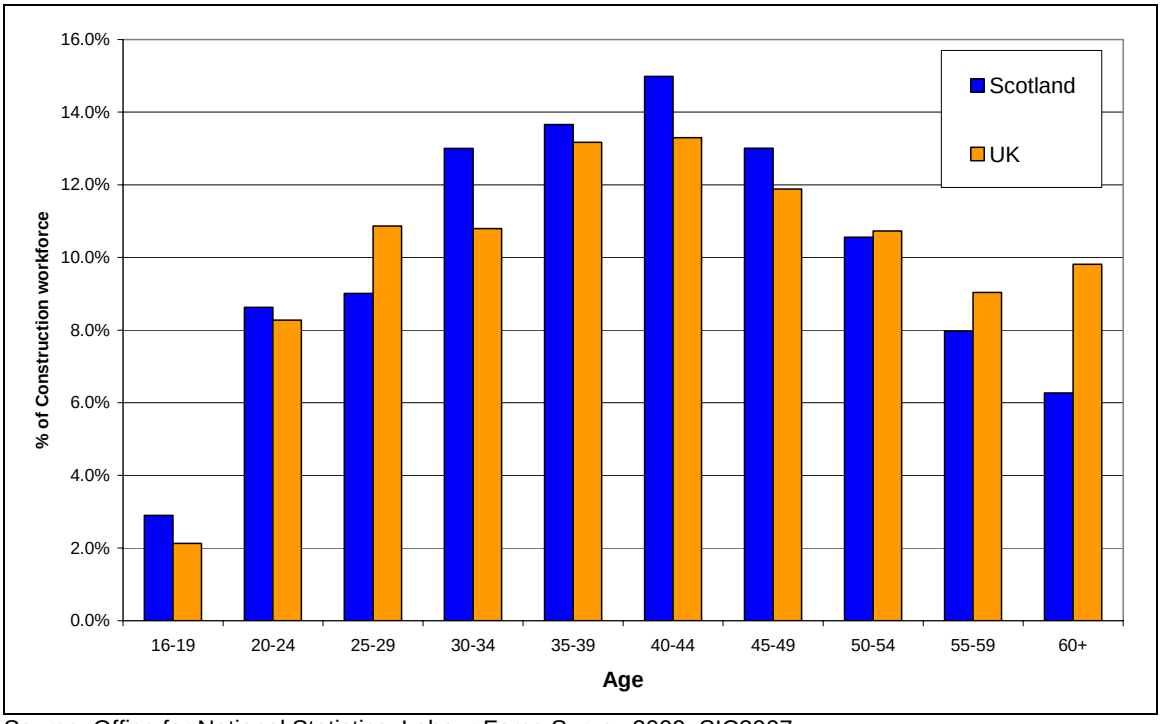
Many of these changes have, of course, already begun, and will continue in an evolutionary way to affect how tasks are performed on site and what skills are required of the workforce as a whole. To better understand this potential change, ConstructionSkills has established a Future Skills Unit to examine the skills that will be needed by the construction industry, with a remit to cover the UK and the different skills needs that will occur across England, Northern Ireland, Scotland and Wales.

2.2.6 Demographics

As with the UK, Scotland has an ageing population as advances in life expectancy mean that successive generations are living much longer. This not only affects what they might demand, but also what the construction industry can provide in terms of the built environment.

The age profile of the construction industry for both professionals and contractors is shown in Chart 10, and compares Scotland against the UK.

Chart 10 - Age Profile of Construction Industry, Scotland v United Kingdom: 2009



Source: Office for National Statistics, Labour Force Survey 2009, SIC2007

Scotland's profile exhibits some subtle differences to the UK view with a slightly higher proportion of younger people, particularly in the 16-19 age band, and significantly lower levles of those aged 55 and over. Both of these could be viewed as positive signs as it shows that Scotland is attracting young people into the industry and is perhaps less susceptible to losing skills through workers retiring over the next decade.

The lower proportion of workers aged 25-29 years may relate back to the drop in output and employment that occurred around 2001 to 2002, but could equally reflect the wider difficulties the industry faced in attracting entrants following the previous recession. The effects of the 1990s recession cannot be understated in terms of the damage done to the industry, undermining it as a positive career option. In fact it took the industry some 10 years or more to recover from the slump of the early-1990s in respect of employment and training returning to pre-recession levels.

Within Scotland there are also some notable general demographic differences that will affect the construction industry. Rural areas of Scotland have a lower level of population across the 16-34 age groups and a higher level across the 40-60+ age groups. This indicates that attracting younger people into the construction industry in these areas will be more of a challenge at a time when they will have a higher level of workers set to leave the industry through retirement.

The under-representation of women and ethnic minorities also remains a priority issue for the industry.

2.2.7 Legislation

Legislation remains a key driver for change across the industry for both the UK in general and specifically for Scotland. It is important to note that legislation operates at three main levels – European, UK and Scotland and there can be key differences in legislation, especially between UK and Scotland. A more detailed discussion of legislation will follow in Section 5, however an example of the differences that can occur is given by looking at the different response to climate change.

The Scottish parliament established the Climate Change (Scotland) Act and the target is a 42% reduction in greenhouse gas emissions by 2020, with year on year reductions from 2011. This is a higher target than set at either a European or UK level, which is for a 34% reduction in greenhouse gas emissions by 2020 and no commitment to deliver year on year reductions. In addition there has been a raft of policies such as the Renewables Action Plan, the Renewable Heat Action Plan and the Energy Efficiency Action Plan, which will all act as drivers of change for the construction industry in relation to the adoption of more innovative methods of construction and renewable technologies.

While Scotland has some natural advantages that promote the introduction of renewable power, such as wind and tidal energy, it is also evident that the Scottish Government has a firm commitment to deliver a low carbon economy[20]. Scotland is the only country in the world to set a greenhouse gas emissions reduction target of more than 40% by 2020 and lay out a delivery plan of how it sees this being achieved.

With this legislation, Scotland is sending a clear signal that it is one, if not the leading nation, in signing up to tackling climate change.

This legislation, and its associated targets, will drive the transition to a low carbon economy at a faster pace in Scotland than other areas of the UK and there will be implications for the Scottish construction industry. It is also worth bearing in mind that the Scottish Government, as well as being a legislator, is also a major client for construction work.

The UK report noted the possible impact of changes to legislation around self-employment status and taxation. Given that Scotland has a lower level of self-employment compared to the UK, this will have less of an effect. However Health and Safety legislation will still be a key driver for the construction industry and the law is the same, although there is a difference in how crime is prosecuted in Scotland[21].

According to the Health and Safety Executive (HSE) construction has the largest number of fatal injuries compared to other main industry groups and in 2008/09, 29.4% of all fatal injuries were in the construction industry.

It should also be noted that the Building Regulations in Scotland are different from other areas of the UK, and that these will be changing in 2010[22].

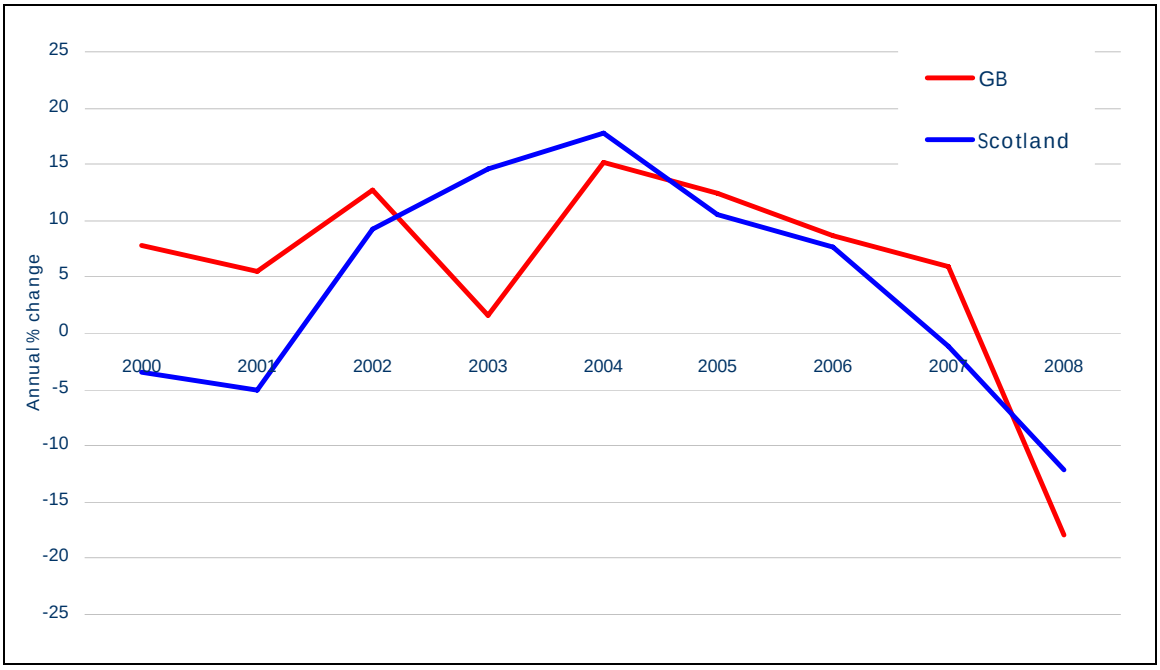
2.2.8 Consumer Demand

The construction industry in Scotland has a broad client base, all of whom have different demands and expectations and to some degree this is reflected in the fragmented nature of the industry. In this respect the sector might be better described as a collection of separate industries. Certainly the face of the industry dealing with the domestic market building house extensions and undertaking home improvements is very different to that responsible for building a new school, hospital, or sports stadium. Nevertheless, it is demand across this wide and varied client base that drives what, where and how the industry builds.

[20] Climate Change Delivery Plan, Scottish Government, 2009
[21] Health and Safety Executive, http://www.hse.gov.uk/scotland/aboutscotland.htm
[22] http://www.sbsa.gov.uk/pdfs/consultationenergyannexa.pdf

Chart 11 shows new construction orders in Scotland declining by 12% in 2008, a second consecutive annual decline, though slightly better than the GB figure of nearly -18%. Construction orders totalled £4.1bn, in current prices, which was the lowest annual outturn since 2004.

Chart 11 – Annual % change in construction orders, Great Britain v Scotland, 2000 to 2008



Source: Construction Skills Network; Experian; Office for National Statistics
Note: Construction orders data is not available for Northern Ireland and comparison is therefore made against Great Britain (GB), which covers England, Scotland and Wales.

Although total new orders declined in 2008, the infrastructure and public housing sectors actually saw new orders rise during the year. New infrastructure orders rose by 55% to a record high of £987m, while the public housing sector increased by a more modest 14% to £355m, also a record high. In contrast, the commercial and private housing sectors saw the most marked declines, with new orders falling by 38% and 25%, respectively.

New orders continued to fall in the nine months to September 2009. Totalling £2.2bn, in current prices, new orders were 35% lower than the same period of 2008.

The two public sectors, public housing and public non-housing, were the only sectors to buck the trend and record growth of new orders in the first three quarters of 2009. New orders in the public non-housing sector totalled £562m, 16% higher than the same period of 2008. The public housing sector saw a weaker rise of 7%.

New orders fell at the strongest rate in the infrastructure sector, dropping by 57%, although it should be pointed out that this sector, more than any other, is characterised by a lower number of number of high value, long term projects. 2008 was a particularly strong year for infrastructure projects with a number of major contracts let such; as the Edinburgh tramline, Airdrie to Bathgate rail link and a number of large road schemes. The industrial and commercial sectors both saw declines of 47% in new orders in the first three quarters of 2009 and the private housing sector was not far behind with a decline of 45%, year-on-year.

2.2.9 Productivity and Industry Performance

This will be covered in more detail in both Section 6 and Section 7 that follow. The general level of productivity within Scotland is seen as a key issue for the Scottish Government and it will have a strong influence on future policy.

"Scotland has not, however, matched the UK economic growth rate despite its positive skills profile."
Skills for Scotland, 2007, pg 6

The long term target for the Scottish Government is, *"to rank in the top quartile for productivity amongst our key trading partners in the OECD by 2017"*
Government Economic Strategy, 2007, pg 13

To achieve this, the Scottish Government will be looking at a range of measures such as investment in information and communications technology, investigating how skills are applied in the workplace, looking at how research, development and innovation can be improved and developing enterprise performance in Scotland.

This will be quite a far reaching body of work and there will be implications for the Scottish construction industry, especially around innovation and how skills are utilised in the workplace.

Productivity improvements will also be a key issue for construction in general, especially when coming out of the recession as there will be pressure on the industry to effectively do more with less and deliver better value for investment

Summary Box
This section gave an overview of the construction sector then outlined what we see as the factors driving skills demand for Scotland.

As a sector, construction in Scotland

- Employed over 230,000 workers and professionals, 9.8% of the overall UK construction workforce
- Estimated construction output for 2009 for Scotland is £8.2billion, 8.4% of the UK total construction output.
- Scotland is ranked 6th out of the 12 nations and regions of the UK in terms of overall construction output figures.
- In 2009, there were over 23,000 enterprises involved in the construction sector with over 90% of these employing less than 10 people.
- Has a lower level of self-employment when compared to the UK
- Skilled trades occupations are by far the largest occupation group involved in the sector.

In a sector which has a mobile workforce, the Scottish construction industry shows a clear difference with 68% of employees spending all of their time in the industry working within Scotland.

Change within the industry is being driven by a number of factors

- Construction performance is closely linked to general economic performance and the recession has been a dramatic drop in output levels between 2008 and 2009, although this is similar to the fall recorded at UK level.
- Infrastructure work is a key sector for Scotland with output in this sector currently at twice the overall UK level.
- Public and Private housing work are other sectors where Scotland is above the UK level, while there is a drop in the Repair and Maintenance sectors.
- The economic downturn and the need to increase sales are the main constraints facing employers at the moment. Finding suitably skilled staff is not a significant issue.
- Legislation and new technology are two important factors within Construction, especially with the Scottish Government's Climate Change (Scotland) Act. Meeting the greenhouse gas emissions target for a 42% reduction by 2020 is set to have a significant impact upon the Scottish construction industry.
- Although Scotland has a high skill profile, this does not yet equate to high levels of productivity. This is an area of concern for the Scottish Government and there are strategic targets to improve this.

Scotland's demographics and natural geography present some other challenges;

- Scotland's population profile, like the UK is set to change with more of an older age and less younger people, although this pattern does differ slightly in Scotland's rural areas.
- Scotland covers 30% of the UK land area with less than 10% of the population
- Future work projects, especially energy infrastructure related are located in the rural areas.

All of these points highlight the particular challenges that are currently driving the employment and skills demand in the Scottish construction sector.

3. What Have Been the Recent Trends in the Supply of Skills?

The UK construction industry is relatively well catered for in terms of the supply of skilled new entrants via education and training. The latest available data[23] providing a full UK picture (2007/08) shows approximately 68,000 enrolments onto construction courses at both further and higher education. Taking drop-out and non-completion into account this still provides the industry with a large supply of skilled workers.

This section will look at the trends in the supply of skills to the Scottish construction industry by covering two main issues,

- What has been the level and type of skills entering the industry
- Workforce training and development.

Both of these areas are important aspects in the supply of skills as any view needs to consider the training and development of those already employed within the industry alongside the flow of new entrants. Before looking at both of these it would be worth outlining the general skills profile of the Scottish construction industry. As this section covers recent trends in the supply of skills all references, comparing Scotland to the UK, the UK skill levels have been used in preference to the Scottish Credit and Qualifications Framework levels.

3.1 Skills profile of the Scottish construction industry.

Table 4 shows the highest qualification level achieved by the construction industry workforce by geographical area and compared to all UK industries.

Table 4 - Construction Industry Workforce Qualifications v All Industries, UK: 2009

	Construction Industry					UK - All Industries
	England	Wales	Scotland	Northern Ireland	UK	
S/NVQ L4 & above	30%	24%	**34%**	17%	30%	34%
S/NVQ L3	17%	22%	**18%**	15%	17%	16%
Trade Apprenticeships*	11%	12%	**16%***	28%	12%	5%
S/NVQ L2	12%	10%	**11%**	11%	12%	16%
Below S/NVQ L2	12%	8%	**7%**	5%	11%	13%
Other qualifications	10%	11%	**6%**	6%	9%	9%
No qualifications	8%	12%	**9%**	18%	9%	8%

Source: Office for National Statistics, Labour Force Survey
Note: * Trade apprenticeships within Scotland are carried out to SVQ L3, which is not always the case in other areas of the UK where L3 is optional.

From the table it is evident that the Scottish construction industry:

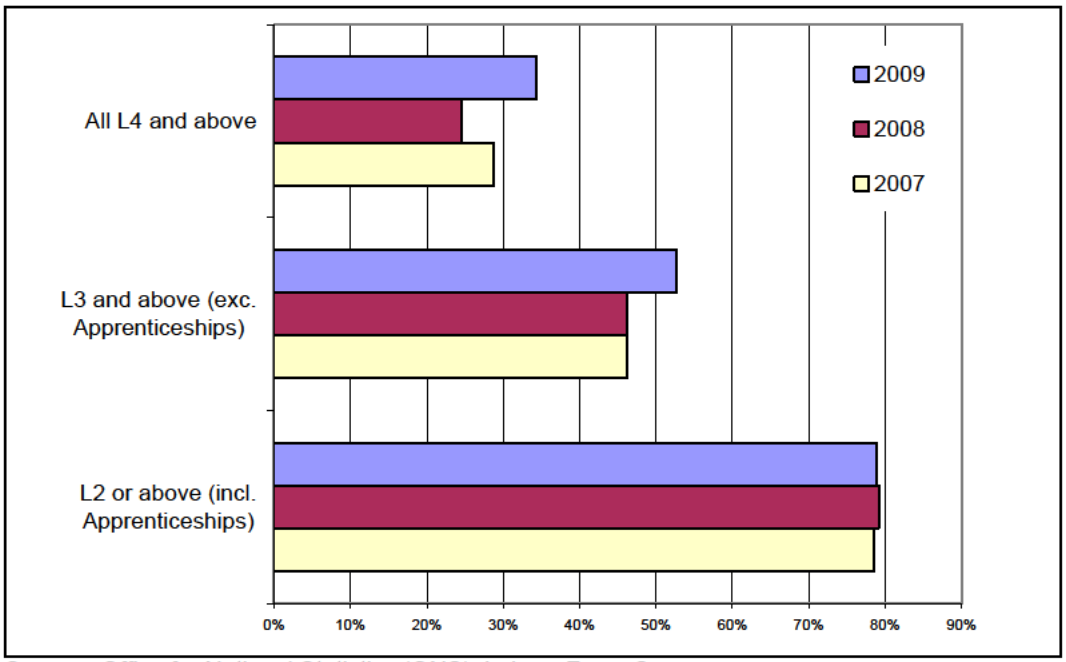
- Generally has a higher skills profile than other areas of the UK
- Is above the UK skill profile at all levels

It is also worth noting that compared to all industries the construction workforce in all areas of the UK has a significantly higher proportion of apprenticeships, indicating how important this is to the industry in general. In England, Wales and Northern Ireland it is standard practice to equate an apprentice to a Level 2 qualification, however this is not the case in Scotland where a Level 3 qualification is considered the norm for construction. Taking this into account would increase the proportion of L3 qualifications within the Scottish construction industry.

[23] ConstructionSkills, Training and the Built Environment; Department for Education and Learning NI; Higher Education Statistics Agency

There have been some fluctuations to the qualification profile of the construction workforce in Scotland over the last three years as Chart 12 demonstrates.

Chart 12 - Qualifications of the Construction Workforce, Scotland: 2007-2009



Source: Office for National Statistics (ONS), Labour Force Survey
Note: ONS data does not distinguish between L2 and L3 Apprenticeships therefore all have been included in the L2 and above figure, not the L3 and above.

The profile for qualifications held at L3 and above (excluding trade apprenticeships) between 2007 and 2009 is increasing in Scotland while the qualifications held at L2 or above remains stable.

There does appear to be a significant shift in the profile around level 4 and above qualifications between 2008 and 2009. However we would recommend interpreting these results with a degree of caution as the apparent increase may be related to data classification issues rather than a sign that there has been a dramatic shift in the L4 and above skills profile of the Scottish construction industry.

Analysis across a range of construction occupations is shown in Table 5. This is split by those who work falls under SIC2007, 41. 42, 43.1,43.3 & 43.9, such as bricklayers, roofers, wood trades, construction managers and the like, against those who work in SIC2007, 71.1 & 74.9, such as civil engineers, architects, surveyors and the like.

Table 5 - Construction Industry Workforce Qualifications by SIC2007 Occupations, Scotland v UK 2009

	Scotland 41 – 43.9	Scotland 71.1 & 74.9	UK 41 – 43.9	UK 71.1 & 74.9
S/NVQ Level 4 & above	24%	64%	20%	66%
S/NVQ Level 3	19%	16%	18%	13%
Trade Apprenticeships	20%	4%	14%	3%
S/NVQ Level 2	11%	9%	13%	7%

Source: Office for National Statistics, Labour Force Survey

As would be expected the vast majority of occupations with SIC2007, 71.1 & 74.9 are educated to L4 and above, while those covered in the classifications around SIC2007 41 to 43.9 show a far higher proportion of trade apprenticeships. The good point for

Scotland is that over both set of occupational splits the profile for construction workers is in most cases above the comparable UK figure.

3.2 What has been the level and type of skills entering the industry?

The main routes for workers entering the industry are from;

- School
- Apprenticeships
- Higher Education
- Career change from another sector
- Migration
- From unemployment

Scotland's construction sector is different to other areas of the UK in that there has not been a route for workers to enter the industry from full-time further education. In England, Northern Ireland and Wales it is possible for someone to study a full-time award such as a Construction Diploma to gain some technical knowledge before entering the industry. However in Scotland, this has not been possible and undertaking a full apprenticeship is the recognised route that is endorsed and supported by all.

As mentioned earlier, the main recognised apprenticeships in Scotland are carried out to SVQ Level 3 where possible, with a typical programme of study taking four years to complete. Again this is different to England, Northern Ireland and Wales, where NVQ Level 2 is considered the benchmark and progression to Level 3, while encouraged, is optional. A typical programme takes 2 years for a Level 2 with an additional year for a Level 3.

Although people entering the industry from school, career change and unemployment are important, this report will focus on the level and type of skills entering Scotland's construction industry from apprenticeships and Higher Education as these historically have been the two main routes.

Section 2 briefly mentioned that Scotland has one of the lowest levels of workers who come from other areas, either from the UK or abroad. This indicates that in the past migration has not been as much of an issue as it has been for other areas of the UK, however migration will be covered in more detail in Section 7 as it is likely to be a more important issue for Scotland in the future.

3.2.1 Apprenticeships

There is wide recognition of apprenticeships within the Scottish construction industry[24] with 63% of employers being aware of Modern Apprenticeships. This is a far higher level of awareness than other areas of the UK where less than half of employers were able to specify a type of apprenticeship.

As mentioned earlier, there are also significant differences in that apprenticeships in Scotland are carried out to SVQ Level 3, typically over a four year period and incorporate a skill test at the end.

This means a different apprenticeship system exists within the Scottish construction sector and the level of support from employers is evidenced by the fact that in 2008, Scottish employers were more likely than average to have a current apprentice (19% of employers in Scotland against 7% for all GB employers). The likelihood of taking on an apprentice is also notable with 27% of Scottish employers considering it quite likely or very likely that they would have someone starting an apprenticeship over the coming 12 months. The comparable GB figure was only 16%.

In terms of the numbers of apprentices the recession has had a significant impact upon construction apprenticeships. With the levels of work across the industry dropping

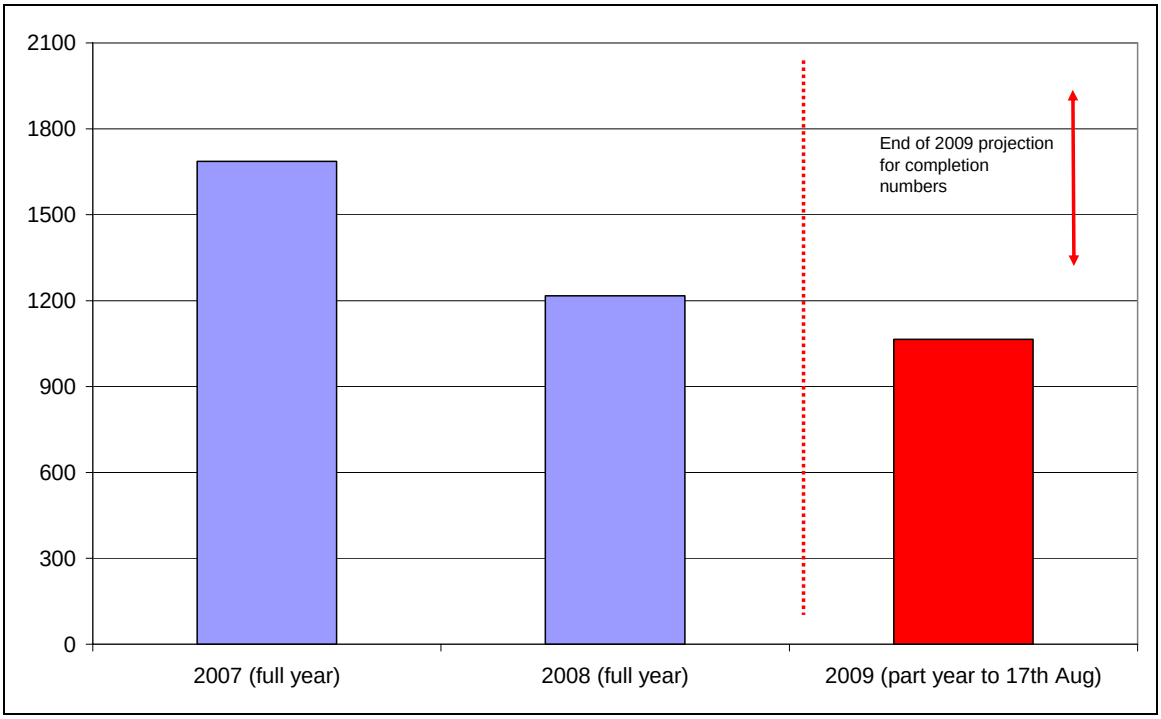
[24] Skills and Training in the Construction Sector 2009, ConstructionSkills, 2009

significantly, apprentices became displaced as employers no longer had the work to sustain levels of training. ConstructionSkills in conjunction with UK and Scottish Governments implemented initiatives such as the National Apprenticeship Vacancy Matching Service and further support packages to employers to help the industry to try and retain this flow of valuable skilled employees, such as ScotAction and Safeguard an Apprentice.

The current situation with regard to displaced apprentices showed that 42% of all displaced apprentices being replaced with another employer, which leaves 651 within Scotland requiring a work placement. There are regional differences variations across Scotland with 71% of all displaced apprentices in the Highlands and Islands being replaced, compared to 32% in lowland Scotland. 108 apprentices have been helped through 'ScotAction' and there have been over 30 enquiries for the Safeguard an Apprentice initiative.

To give a view of the recent trends in the number of apprentices completing a modern apprenticeship within Scotland, Chart 13 below shows the total number of completions for the last two full years and an indication of the numbers for 2009.

Chart 13 – Total Modern Apprenticeship completions, Scotland 2007-2009



Source: ConstructionSkills

The data shows a significant dip in the number of apprentice completions recorded in 2008 when compared to 2007. The full data is not available for 2009, however as of 17th August 2009 the number of completions stood at just over 1,000, and based on previous trends, this indicates that by the end of 2009 completions for apprenticeships will be above the 2008 level and either on a par or possibly even above 2007's level.

3.2.2 Higher Education

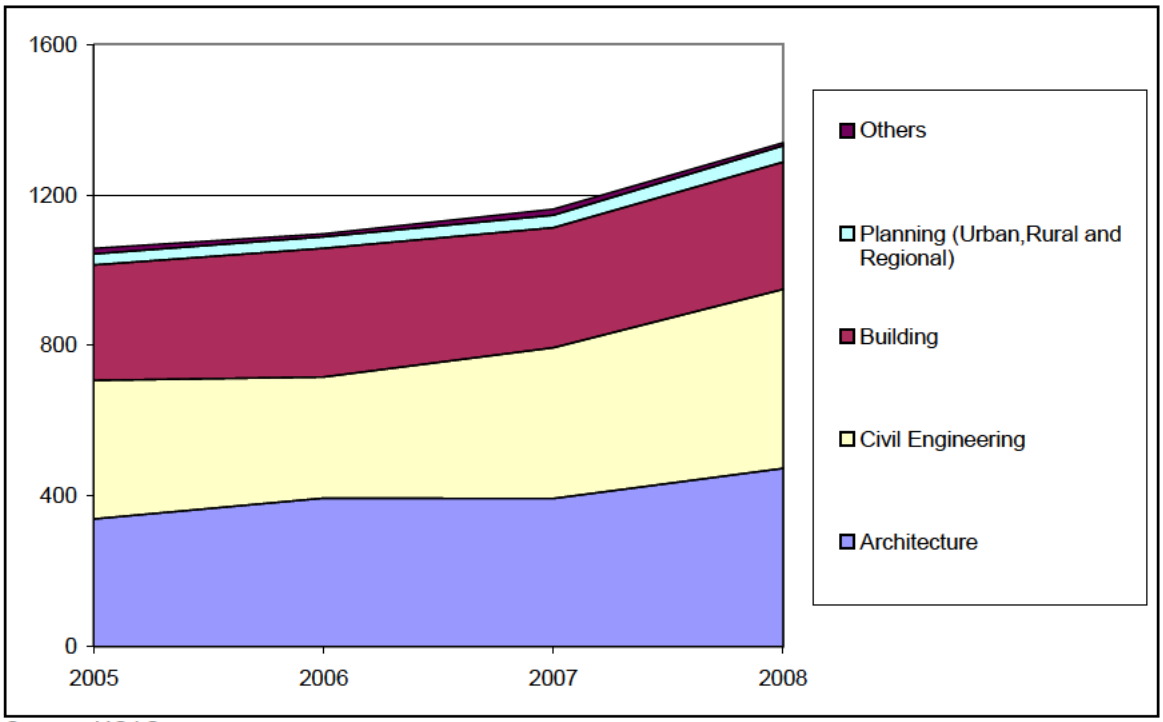
A good indication of the trends in Scottish Higher Education can be taken from looking at applications for construction related degree courses[25]. The main degree courses offered fall into the categories shown below.

- Architecture
- Building
- Civil Engineering
- Planning.

[25] http://search1.ucas.co.uk/fandf00/index.html

In terms of the overall number of applicants on these courses, Chart 14 below shows how these have risen between 2005 and 2008 for UK students undertaking degree courses with a Scottish University, along with the proportion on each of the main degree course identified above.

Chart 14 – UK domicile applications on construction degree qualifications for Scottish Universities, 2005-2008



Source: UCAS

Like the overall UK picture there has been a steady increase in applicants in recent years, with a slightly steeper rise recorded in 2008. The chart also shows the importance of architecture, civil engineering and building degrees as these three account for over 95% of all construction degrees within Scottish Universities.

As the most recent set of data is only available up to 2008, it is not clear how the recession will have affected applications in 2009, however applicants will be making course decisions that influence career choices that will be made of around four years from when the course starts. Having said that the indications are that it is likely that there will be a good supply of graduates with construction related degrees in the future, both for Scotland and the UK.

3.3 What Has Been the Level and Type of Skill Development within the Workforce?

Having examined the level and skill of people entering the workforce, the next step is to look at the level and skill development for those already within the workforce. We have seen above how the UK and Scotland's construction industry stock of skills, as defined by qualifications, is changing and in this section we will examine other available measures of skills development, notably training activity and participation in training.

To achieve this, this section examines the extent and nature of training and development activity reported through recent research[26,27,28]. It discusses off-the-job training, described as that away from the individual's immediate work station, and on-the-job training, described as activity that would be recognised as training by staff rather than

[26] ConstructionSkills, Skills and Training in the Construction Industry, 2009
[27] Skills in Scotland 2008, Scottish Government 2009
[28] Construction Scottish Sector Profile 2009, Alliance of Sector Skills Councils, 2009

the sort of learning by experience which could take place all the time[29], the degree of training leading to qualifications, and the types of training undertaken. Figures on the numbers of staff trained cover both direct employees as well as self-employed and other staff working for the employer[30].

While there are broad similarities between the performance of training for the Scottish construction industry and UK trends there are some notable differences.

For construction in Scotland, there appears to be a pattern in that companies are;

- More likely to train a higher percentage of their workforce, although this appears to be mainly for companies with between 3 and 9 employees.
- Training is more likely to be carried by using short duration off-the-job training of up to 2 days
- Scottish employers formally assess if training and development has had an impact upon an employees performance in the workplace.
- Less likely to use further education to deliver training and more likely to use Higher Education.

This pattern of training will be related to the distribution of companies within the sector, however it is quite a different pattern to that shown by the Scottish Employers Skill Survey 2008[31] which showed the proportion of employees receiving training more towards larger companies and for slightly longer duration (more 3 – 5 days).

For the type of training, sample size within ConstructionSkills research restricts detailed analysis at an occupation level. The Construction Scottish Sector Profile 2009[32] does show a profile of broad training types quite similar to that of all industries in Scotland, although both management and supervisory training is less prominent.

When looking at the barriers that employers have experienced to training and development over the last 12 months, just over half of employers that trained would have preferred to provide more training than they actually undertook (52%). There were two main barriers to being able to deliver more training;

- A lack of funds for training, or training being considered expensive;
- Not being able to spare staff the time off for training.

However when asked a slightly different question of why employers do not train, the overwhelming response from Scottish construction employers was that their employees were already fully proficient (Scotland 95%, GB figure 78%). Again these findings show a consistent view across all recent research.

[29] ConstructionSkills, Skills and Training in the Construction Industry 2009
[30] ConstructionSkills, Skills and Training in the Construction Industry 2009
[31] Skills in Scotland 2008, Scottish Government, 2009
[32] Construction Scottish Sector Profile 2009, Alliance of Sector Skills Councils 2009

Summary Box

The recent trends in the supply of skills firstly looked at the overall skill profile of the industry before moving on to look at the level of training for those entering the industry and finally outlining the training and development of the current workforce.

In terms of skills profile, the Scottish construction industry

- Generally has a higher skills profile than other areas of the UK
- Is above the UK skill profile at all levels.

Within the sector, occupations such as civil engineers, architects and surveyors predominantly qualified at S/NVQ L4 and above, while Trade apprenticeships are prominent for skilled trade occupations such as wood trades, bricklayers and the like.

Although people entering the industry from school, career change and unemployment are important, the level and type of skills of people entering Scotland's construction industry from apprenticeships and Higher Education have been the two main routes.

Scotland's construction sector is different to other areas of the UK in that there has not been a route for workers to enter the industry from full-time further education.

For apprenticeships

- There is wide recognition of apprenticeships within the Scottish construction industry
- In Scotland they are carried out to SVQ Level 3 with a skill test at the end.
- Scottish employers were more likely than average to have a current apprentice
- 27% of Scottish employers considered it quite likely or very likely that they would have someone starting an apprenticeship over the coming 12 months.
- The recession has had a significant impact upon construction apprenticeships with them being displaced
- Apprentice completion numbers in 2009 look to be on a par with those seen in 2007.

For higher education the main degree courses are

- Architecture
- Building
- Civil Engineering
- Planning

The trend is rising numbers between 2005 and 2008 for UK students undertaking degree courses with a Scottish University.

With workforce development employers in Scotland are;

- More likely to train a higher percentage of their workforce, mainly for companies with between 3 and 9 employees.
- Training is more likely to be carried by using short duration off-the-job training of up to 2 days
- Scottish employers formally assess if training and development has had an impact upon an employees performance in the workplace.
- Less likely to use further education to deliver training and more likely to use Higher Education.

4. Current Mismatches between Demand and Supply for Skills

In an efficient labour market, the skills of the workforce will be sufficient to meet employer needs and the supply of skills is aligned with market demand. If either supply, demand or the matching processes are deficient, several types of mismatches occur. The first is **skill shortages**, which arise when employers find it difficult to fill their vacancies with appropriate skilled applicants. The second mismatch that occurs is **skill gaps**, where the existing workforce are seen to be lacking the skills necessary to meet business need. The third dimension is **unemployment**. The following section will discuss each of these mismatches and their occurrence within the Scottish construction industry.

4.1 Skill Shortages

To understand the context of skill shortages in the Scottish construction industry employers[33] were asked whether over the last 12 months they had had shortages of skilled workers:

- Only 2% of construction employers in Scotland indicated that they did not have enough skilled workers. The comparable figure for Great Britain (GB) is 3%.
- Just over half, (54%) felt that they had been operating at or near to full capacity over the last 12 months. GB figure 50%
- Over the last 12 months 32% of employers did not have sufficient work for their workforce. GB figure 36%.
- 40% of employers attempted to recruit either skilled staff or an apprentice over the last 12 months. GB figure 39%.

These results show that the construction industry in Scotland is on a par with that seen across Great Britain. In fact in terms of attempting to recruit skilled staff or an apprentice, only Wales performed better, while in terms of having enough work, Scotland faired better than England, Northern Ireland and Wales. The results also show very considerable changes compared with 2008[34], with far fewer employers in 2009 reporting shortages of skilled staff over the previous 12 months.

These findings are consistent with trade survey[35] results from organisations across the construction industry, who all reported a considerable decrease in skill shortages to a record low.

4.2 Hard-to-Fill Vacancies

When trying to recruit skilled staff, 39% of Scottish employers reported some of these vacancies as being hard-to-fill. This appears to be more of an issue for Scotland than other nations as this figure is higher than any other nation and well above the GB figure of 22%. This indicates that although the number of vacancies has reduced to previous years, the Scottish construction industry is facing more of an issue than other nations.

Sample size limits interpretation of the data to highlight particular occupations where hard to fill vacancies are an issue for Scotland. However the findings are also supported by earlier research[36] which highlights hard to fill vacancies as being an issue for the Scottish construction industry.

[33] ConstructionSkills. Skills and Training in the Construction Industry, 2009
[34] ConstructionSkills. Skills and Training in the Construction Industry, 2008
[35] Federation of Master Builders. State of Trade Survey, Q2, 2009; RICS Construction Market Survey, Q3, 2009; Construction Products Association. Construction Trade Survey, August 2009;
[36] Construction Scottish Sector Profile, Alliance of Sector Skills Councils, 2009

The UK report lists the most common causes of hard-to-fill vacancies as shown in Table 6 below, with the main concern being around a lack of skills, not enough people entering the industry and a lack of motivation, almost identical to results from the previous year.

Table 6 - Causes of hard-to-fill vacancies for skilled staff, Great Britain

Applicants lack the skills we require	84%
Not enough people being trained in the construction trades in recent years	81%
Applicants lack the motivation / attitude we look for	74%
Applicants lack the work experience we look for	68%
Competition from other employers	39%

Source: ConstructionSkills, Skills and Training in the Construction Industry 2009

In terms of how this relates to Scotland, again sample size means the results need to be taken with caution, however Table 7 shows that applicants lacking skills and the number of people being trained is less of an issue in Scotland, while more competition from other employers is higher.

Table 7 - Causes of hard-to-fill vacancies for skilled staff, Scotland

Applicants lack the skills we require	63%
Not enough people being trained in the construction trades in recent years	76%
Applicants lack the motivation / attitude we look for	79%
Applicants lack the work experience we look for	65%
Competition from other employers	74%

Source: ConstructionSkills, Skills and Training in the Construction Industry 2009
Note: low sample sizes

The issue of attitude and motivation causing hard-to-fill vacancies links through to earlier Skills in Scotland findings, where softer skills were also cited as a reason in addition to technical and practical skills. Both sets of research highlight the fact that in addition to equipping applicants with occupational skills, applicants need a range of softer skills to be able to effectively enter the workforce.

4.3 Skill Gaps

Overall around one in ten employers (10%) have staff lacking proficiency and this therefore constitutes a skills gap. This figure is broadly consistent across England, Northern Ireland, Scotland and Wales, however there is a difference in where the gaps are seen.

Scotland reports a greater incidence of skills gaps around labourers and general operatives, nearly three times the level of any other nation. In part this may be down to the differences in training structure with L3 vocational qualifications being the standard for trade occupations in Scotland, which is not the case in England, Northern Ireland or Wales.

At a UK level, the most common cause of skills gaps is that staff lack experience or have been recently taken on, a contributory factor for around three-fifths of employers with skills gaps (61%). The proportion mentioning this factor is lower than found in 2008 (78%), indicative of lower recruitment activity during 2009.

As with causes of hard-to-fill vacancies, the sample size means that caution has to be taken when looking at responses at a Scottish level, although there were some notable differences around the causes of skills gaps.

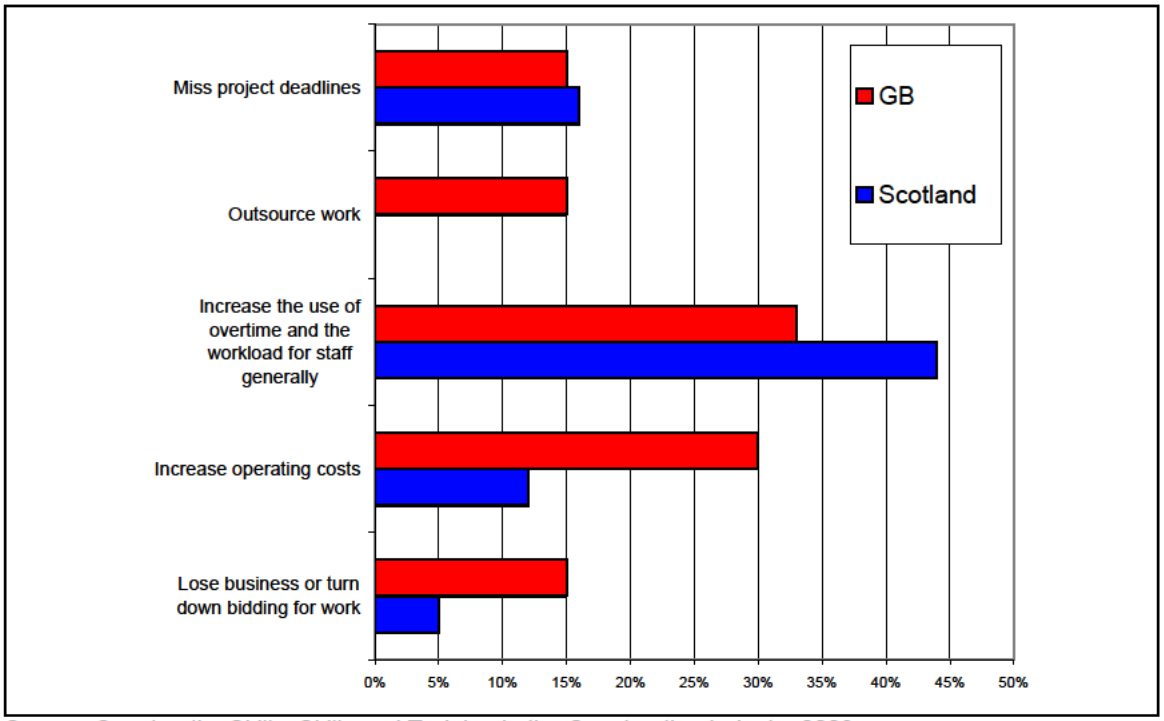
In Scotland staff having a lack of experience was viewed as the main reason (67%) for skills gaps, however having the opportunity to train and develop staff along with staff not being able to keep up with change in the industry were not viewed as being an issue in Scotland. Both of these areas were only seen as an issue by 5% of respondents, compared to figures of greater than 30% at GB level.

Having both the opportunity to train and develop combined with the willingness to change are very positive qualities in a workforce and a good sign for the Scottish construction industry. It does though pose the question that as these are not seen to be an issue, why are the levels of skills gaps reported by Scottish employers not lower than other areas?

As for the impact of skills gaps on employers and how employers look to overcome them the details for Scotland are shown on Charts 15 and 16, compared to the overall GB figures.

When it comes to the impact of skills gaps on the business, employers in Scotland seem to manage workload and overtime more than other areas of Great Britain, while it was also notable that there was no outsourcing of work.

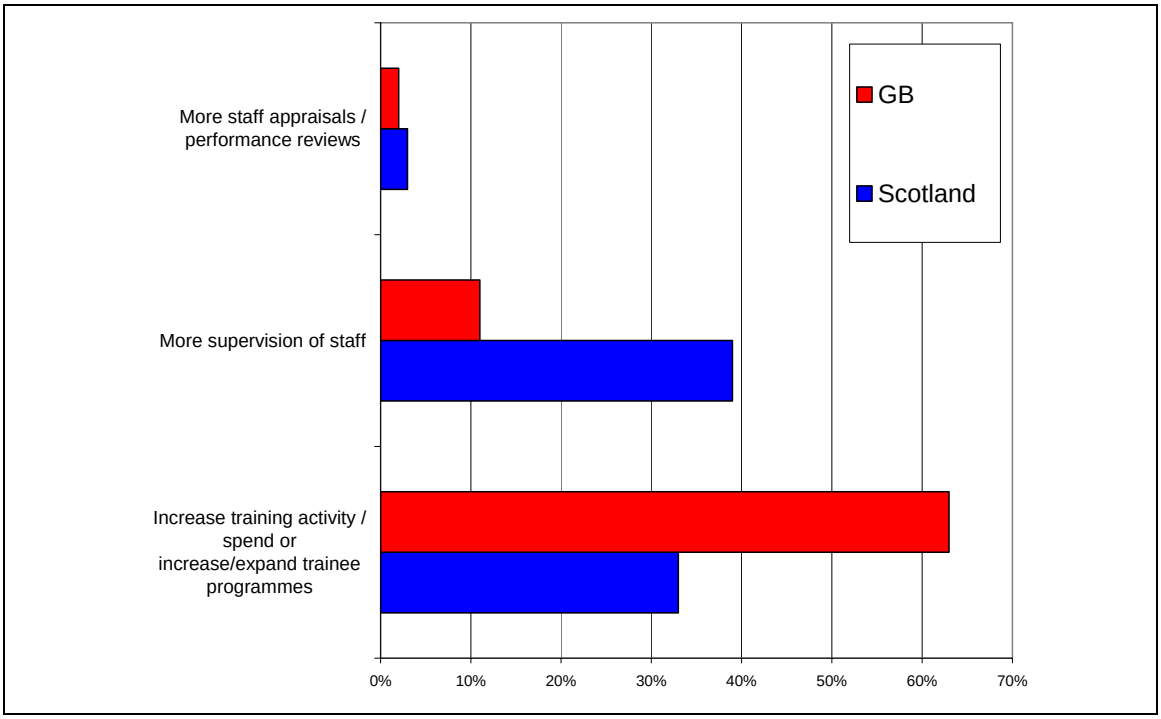
Chart 15 - The impact of skills gaps, Scotland v Great Britain



Source: ConstructionSkills, Skills and Training in the Construction Industry 2009

As to how employers then look to overcome or reduce the impact that skills gaps have, Chart 18 shows that Scottish construction employers are more inclined to use more supervision of staff than increase training activity. This increased supervision rather than increased training may be linked to the low level of skills gaps that exist, along with the view that workers are generally seen as being proficient, rather than a need to improve overall training levels. Again it should be remembered that skilled workers in Scotland are generally trained to L3.

Chart 16 – Overcoming skills gaps, Scotland v Great Britain



Source: ConstructionSkills, Skills and Training in the Construction Industry 2009

These findings are broadly consistent with those from Skills in Scotland (2008) with the only notable exception being the provision of further training to overcome a skills gap. Here Skills in Scotland (2008) shows that 89% of employers provided further training, while 56% increased or expanded training programmes.

These figures were for all industries in Scotland and the report did not show a construction specific figure, however given the response to the Skills and Training in the Construction Industry (2009) research, it is likely that construction in Scotland's response would be noticeably lower than the all industry figure.

4.4 Training

With regard to the training delivered to staff, both pieces of research[37,38] show a consistent picture, as covered earlier in Section 3.3.

Just over 50% of Scottish construction employers offer training to employees with a mix of off-job only (21%) and off-job/on-job training (27%) being used. This is on a par with training used across GB.

However as Skills in Scotland (2008) notes, as a sector this places the Scottish construction sector as one of the poorest sectors in Scotland for offering training. Only agriculture, forestry and fishing (39%) along with manufacturing (52%) in Scotland offer less training, while in sectors such as public administration and defence, education, and health and social work the levels offering training are at 89% and above.

This would indicate that although Scottish construction is on a par with other areas of the UK, it shows the work that is needed to raise training to the levels of other sectors within Scotland.

[37] Skills and Training in the Construction Industry, ConstructionSkills 2009
[38] Skills in Scotland, Scottish Government, 2009

4.5 Unemployment

As discussed earlier, the incidence of skill shortages has decreased significantly across the construction industry and is currently not considered a constraint on activity. For the most part, this is due to a reduction in recruitment activity, as a consequence of the recession. In conjunction with this impact, firms have also had to make redundancies.

The biggest outflow from the industry is to unemployment, with UK levels now standing at 6.9%, the highest level over the last 15 years. As unemployment is considerably higher in the construction contracting sector (7.4%) than for professionals (4.1%), it can be assumed that redundancies are affecting the whole construction industry.

Table 8 below shows the current unemployment rate for the construction industry and compares these findings to the overall UK rate.

Table 8 - The unemployment rate in the Construction Industry and All Industries, by nation (UK: 2009).

	Construction Industry	All Industries
England	8.3%	6.9%
Wales	10.3%	7.2%
Scotland	9.1%	5.8%
Northern Ireland	11.8%	5.6%
UK	**8.6%**	**6.8%**

Source: Office for National Statistics, Labour Force Survey

As the data highlights the construction industry has been significantly affected by the economic downturn, with the unemployment rate not only higher nationally, compared to the figure for all industries (8.6% v 6.8%), but also higher within each country. For Scotland the construction industry figure of 9.1% is close to the UK figure, however the Scottish all industry figure is well below the UK all industry figure, which shows that construction in Scotland is being hit harder than some of the other industries.

The impact of the recession across the construction industry has radically affected the mismatches between demand and supply. While on the one hand skills shortages (and to a lesser extent skill gaps) have decreased dramatically, this has been at the detriment of unemployment. Although skills shortages are currently at an all time low, lessons need to be learnt from the previous recession. One of the biggest risks to the recovery of the construction industry is a shortage of skills as people made redundant seek new careers outside the industry and new entrants unable to get a job, look elsewhere.

Summary Box

Mismatches in supply and demand mainly result in either a **skill shortage**, were employers find it difficult to fill their vacancies with appropriate skilled applicants, or a **skill gap**, where the existing workforce are seen to be lacking the skills necessary to meet business need.

Skills shortages noted for the Scottish construction industry were that;

- Only 2% of construction employers in Scotland indicated that they did not have enough skilled workers. The comparable figure for Great Britain (GB) is 3%.
- Just over half, (54%) felt that they had been operating at or near to full capacity over the last 12 months. GB figure 50%
- Over the last 12 months 32% of employers did not have sufficient work for their workforce. GB figure 36%.
- 40% of employers attempted to recruit either skilled staff or an apprentice over the last 12 months. GB figure 39%
- When trying to recruit skilled staff, 39% of Scottish employers reported some of these vacancies as being hard-to-fill.
- For Scotland, competition from other employers when trying to recruit skilled staff was considered to be more of an issue

For skills gaps;

- around one in ten employers (10%) have staff lacking proficiency, this figure is broadly consistent across England, Northern Ireland, Scotland and Wales.
- Scotland reports a greater incidence of skills gaps around labourers and general operatives, nearly three times the level of any other nation.
- the most common cause of skills gaps is that staff lack experience or have been recently taken on.
- having the opportunity to train and develop staff along with staff not being able to keep up with change in the industry were not viewed as being an issue in Scotland.

In trying to overcome skills gaps;

- Scottish construction employers seem to manage workload and overtime more than other areas of Great Britain to overcome skill gaps.
- there was no outsourcing of work.
- Scottish employers used increased levels of supervision rather than training
- when training was used, Scottish employer formally assess performance in the workplace significantly more than other nations.

For training and workforce development, the Scottish construction industry is on a par with UK construction, however it is below the norm for all industries within Scotland.

Unemployment within the Scottish construction industry over the last year has been a significant issue;

- UK construction industry unemployment rate, 8.6%
- Scottish construction industry unemployment rate, 9.1%
- Scotland all industry unemployment rate, 5.8%

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5. What new and/or changing factors will influence skill/employment demand in the future?

5.1 PESTLE Analysis

The main UK report highlights the range of factors that can bear upon construction, such as political policy, legislation, economic conditions and environmental impact.

This range of factors will apply to Scotland, however there are some unique aspects which will influence skills and employment in Scotland differently to other areas of the UK. This section will highlight some of these key factors which centre around three main themes.

1. Devolved power
2. Climate change
3. Skills policy

5.2 Devolved power

As noted earlier, the performance of the construction industry is closely linked to that of UK and GDP and for Scotland this relates to GVA. As such the future performance of the Scottish economy will have a significant bearing on the future of it's construction industry, and one of the main issues that will shape the Scottish economy is the extent of devolved power held by the Scottish Parliament.

The Scottish Parliament has arguably had the most devolved power when compared to the other devolved nations and the list below gives examples of some of the main policies and legislation that would have implications for Scotland's construction sector.

- Skills for Scotland: A Lifelong Learning Strategy
- Low Carbon Building Standards Strategy for Scotland (Sullivan Report)
- Scottish Government's Economic Strategy
- Scottish Economic Recovery Plan
- Scotland's budget 2010-11
- Renewables Action Plan
- Renewable Heat Action Plan
- Climate Change (Scotland) Act
- The Scottish Sustainable Procurement Action Plan
- Scotland's Zero Waste Plan
- Energy Efficiency Action Plan
- Scottish Building Regulations.

All of these are examples of where plans and policies laid down by the Scottish government mean a different emphasis from other areas of the UK such as the more stretching greenhouse gas emissions targets in the Climate Change (Scotland) Act.

It is already clear that with the existing range of powers the Scottish government is able to exert a significant influence on policy and plans and a key factor for the future will be the range of powers held by future Scottish governments. Quite simply, with increasing powers any future Scottish government will be able to have a stronger direct influence on plans and policies, which in turn may have an influence on the construction industry.

The Scottish Government recently published "Choosing Scotland's Future, A National Conversation"[39] to set out what it sees as being "the first step in a wide-ranging national conversation about the future of Scotland" (pg viii), discussing options such as further devolved powers or possible full independence.

This discussion will be a vital one for the future of Scotland as it would have far reaching consequences on how Scotland is governed. However further devolution or full independence would require legislation to be passed in Westminster and here this issue is far from clear. The Institute for Public Policy Research (IPPR) recently conducted

[39] Scottish Executive, 2007

research amongst MPs around the implications of Northern Ireland, Scotland and Welsh devolution for England[40]. One of the points covered was the possibility of full independence for Scotland, which a majority of MPs (58%) thought will never happen, while on the issue of increased tax raising powers for Scotland and Wales there was quite an even split (42% agreed, 40% disagreed).

Further devolved power or possible full independence will therefore be a key factor in shaping Scotland's future, especially with a UK election imminent, followed by Scottish Parliament elections on the 5th May 2011.

5.3 Climate change

In passing the Climate Change (Scotland) Act, the Scottish government sent a clear signal that it intends to take a lead role in reducing greenhouse gas emissions. How the government intends to meet this is set out in the Climate Change Delivery Plan[41] and this will have a clear link to the future skills and employment across the built environment. The three main areas will be;

- Electricity:
  With significant investment planned for renewable energy sources such as wind and tidal power to meet the target of 50% of Scotland's electricity generation to come from renewable sources by 2020, workers will need the range of skills to be able to build these both onshore and offshore. There will also be work to ensure that there is a suitable grid connection, especially as proposed sites tend to be in remote areas away from the major population centres where energy will be used.

  Plans to remove carbon from fossil fuel generating power stations by the use of carbon capture and storage technology will mean learning and applying new skills, particularly for engineering construction.

  In addition to skills around building the energy generating and transmission infrastructure, something simple as fitting smart meters to all homes in Scotland would require suitably skilled workers to cover a wide geographical area.

- Heat:
  As well as de-carbonising the energy generating infrastructure, the built environment has a significant contribution to make in improving energy efficiency. This would require a range of skills from the original design stage through to the build, operation and de-commissioning with everyone involved being aware of energy efficiency.

  The heat emissions targets set out in the Delivery Plan for domestic and non-domestic buildings would represent around 12% greenhouse gas emissions. However the targets look to reduce emissions to nearly half of their current level, which will require standards for all new builds, along with a programme to improve energy performance of existing buildings. There is also a target in the Renewable Heat Action Plan for 11% of heat to come from renewable sources, such as biomass by 2020.

  The Sullivan Report[42] made recommendations on how to tackle energy performance and there is due to be further developments of this later this year. It is likely that the emphasis will be different from that planned for the UK, such as the Code for Sustainable Homes, and this may present a different challenge for the construction industry in Scotland in building or upgrading structures in Scotland.

[40] "The English Question, The view from Westminster", IPPR, 2009
[41] Scottish Government, 2009
[42] A Low Carbon Building Standards Strategy for Scotland, Scottish Government, 2007

- Transport:
  Greenhouse gas emissions from transport are one of the main sources and although this does not directly link to the construction industry, making sure that Scotland has an efficient infrastructure network is. For example the Edinburgh Tram line or the proposed High Speed Rail Link to London would be able to use electricity from renewable power sources and thereby reduce greenhouse gas emissions by removing the burden from transport that would have been used.

  As with Heat and Electricity, equipping Scotland with an efficient transport infrastructure will have implications on the skills of the workforce, especially when they are different from current skills.

5.4 Skills policy

In Section 2 the issue of productivity was outlined and improving this for Scotland will be a key objective of the future skills policy[43]. Scotland is looking to have a skills system that amongst other aims;

- Puts individuals at the heart of learning and skills development
- Is supported by a coherent funding system
- Stimulates increased demand from employers
- Improves skills utilisation in the workplace.

The links with employers and making sure that skills are utilised in the workplace will be two key elements as the current evidence tends to show there is a miss-match. Scotland performs well with regard to skills and education however less well with economic performance, hence the importance of making sure that skills are utilised in the workplace to boost productivity and growth[44], [45]

Although construction is not one of the five key sectors listed in the Scottish Government Economic Strategy (2007, pg 29) as having high-growth potential, it is recognised that construction will be an enabling sector in the development of sectors such as Energy, Tourism, Financial and Business Services and the like. This means that as well as being influenced by overall policy decisions around skills, construction will have a direct contribution as to how the supporting infrastructure for these key sectors is developed.

To this end, Scotland having a suitably skilled and productive construction workforce will be a key factor that influences employment and skills development in the future.

As the Scottish construction industry emerges from recession these three factors, devolution, climate change and skills policy will have a significant influence on the future demand for employment and skills. Jobs, skills and productivity will continue to drive the agenda however, the strategic challenge of how to achieve this following a deep recession may involve a different journey and external factors will no doubt strongly influence the drivers for change. As is happening at the moment, the future direction set out by the Scottish government will continue to play a significant part in shaping this.

Construction companies are very aware that their businesses are changing, or require long term change to remain competitive and meet forthcoming legislation. New entrants to the industry will need to be ready to anticipate and meet new and dynamic changes, as will the 75% of the current UK workforce who will still be employed in the industry in 2020, which leads on to the next section, what is the likely demand for employment and skills in the future?

[43] Skills for Scotland, Scottish Government, 2007
[44] The Government Economic Strategy, Scottish Government, 2007
[45] Skills Utilisation Literature Review, Scottish Government Social Research, 2008

Summary Box

There are a range of factors that can bear upon construction, such as political policy, legislation, economic conditions and environmental impact. However there are some unique aspects which will influence skills and employment in Scotland differently to other areas of the UK. These factors centre around three key themes,

1. Devolved power

Future performance of the Scottish economy will have a significant bearing on the future of it's construction industry, and one of the main issues that will shape the Scottish economy is the extent of devolved power held by the Scottish Parliament.

The Scottish Parliament has arguably had the most devolved power when compared to the other devolved nations. With the existing range of powers the Scottish government is able to exert a significant influence on policy and plans and a key factor for the future will be the range of powers held by future Scottish governments. Quite simply, with increasing powers any future Scottish government will be able to have a stronger direct influence on plans and policies, which in turn may have an influence on the construction industry.

2. Climate change

In passing the Climate Change (Scotland) Act, the Scottish government sent a clear signal that it intends to take a lead role in reducing greenhouse gas emissions. For the built environment this impacts across three main areas;

- ***Electricity***: with significant investment planned for energy sources to meet the target of 50% of Scotland's electricity generation to come from renewable sources by 2020, workers will need the range of skills to be able to build these both onshore and offshore. There will also be work to ensure that there is a suitable grid connection and plans to remove carbon from fossil fuel generating power stations will mean learning and applying new skills, particularly for engineering construction.
- ***Heat***: the built environment has a significant contribution to make in improving energy efficiency. This would require a range of skills from the original design stage through to the build, operation and de-commissioning. In addition, heat emissions targets look to reduce emissions to nearly half of their current level, which will require standards for all new builds, along with a programme to improve energy performance of existing buildings.
- ***Transport***: although emissions reductions here do not directly link to the construction industry, making sure that Scotland has an efficient infrastructure network is a clear link. As with Heat and Electricity, equipping Scotland with an efficient transport infrastructure will have implications on the skills of the workforce.

3. Skills policy

Current evidence tends to show there is a miss-match as Scotland performs well with regard to skills and education however less well with economic performance It will increasingly important to make sure that skills are utilised in the workplace to boost productivity and growth. Scotland is looking to Scotland is looking to have a skills system that

- Puts individuals at the heart of learning and skills development
- Is supported by a coherent funding system
- Stimulates increased demand from employers
- Improves skills utilisation in the workplace

6. What is the likely demand for employment/skills in the future?

6.1 Introduction

Looking to the future is not an exact science, however the factors outlined in the previous section will mean slightly different drivers for employment and skills within the Scottish construction industry, although it will still be influenced by trends in the UK economy.

Any view on the future demand for employment and skills needs to consider the general economic and political backdrop and to achieve this for Scotland from 2010-2014, the Construction Skills Network produces an annual report[46] that is underpinned by a core scenario based on assumptions around .

- % GVA growth
- % Construction growth
- Industry structure
- Historic trends
- Construction industry characteristics.

This section will outline what we see as being the core scenario facing construction in Scotland through to 2014. It will then draw on other material such as Futureskills Scotland Labour Market Projections 2007 to 2017 and 2020 Vision[47] to give a view as to the likely demand for employment and skills in the longer term through to 2020.

When looking at material such as 2020 Vision and Labour Market Projections 2007 to 2017, it has to be remembered that the current political, economic and social environment is significantly different to that when these reports were commissioned and produced.

6.2 Core Scenario from 2010 to 2014

Our core scenario for the Scottish industry assumes that from 2010 to 2014:

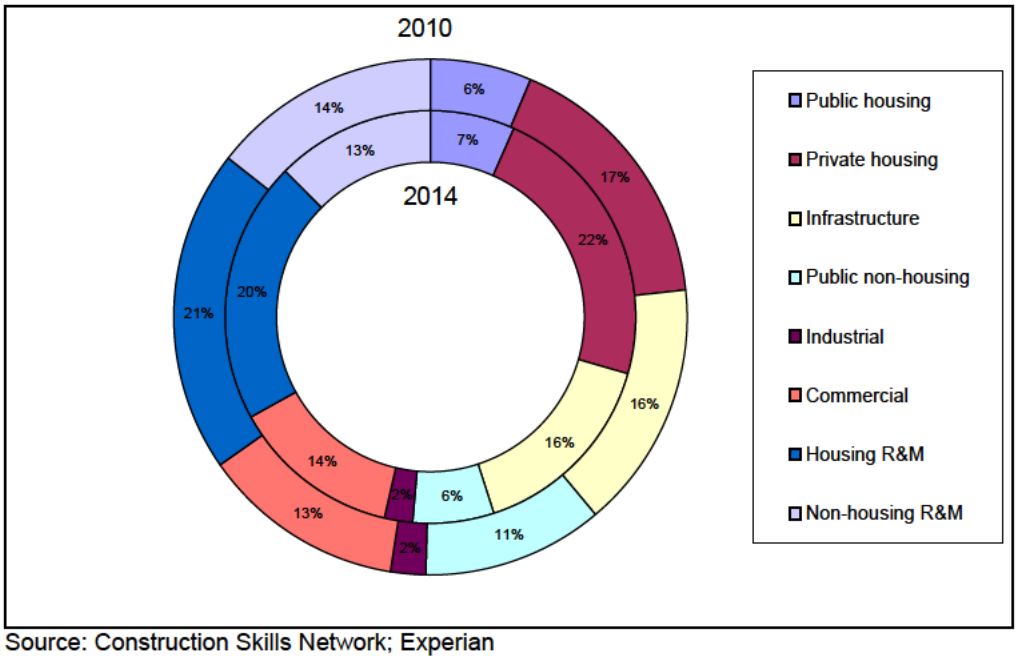
- UK economy will emerge from the technical recession in 2010 followed by a gradual recovery to GDP growth of around 2.0% p.a. by 2014.
- Scottish GVA will follow a slightly different pattern with slightly stronger growth than the UK over the short term before dipping below UK levels from 2013.
- UK construction output will start to recover from around 2011, although it will be at a lower level than GDP growth.
- For Scotland, construction output is forecast to grow strongly from 2010 to 2011, before dropping slightly from 2012 to 2014. Average growth over the period 2010-2014 will be 2.8% which is well above the UK average of 1.7% and the second highest growth rate for all nations and regions of the UK.
- In Scotland, new work will continue to be the main driver of construction output especially private housing and infrastructure sectors..
- Overall, levels of productivity growth remain low at around 1.0% p.a. with productivity growth being driven by new build rather than repair and maintenance work.
- Across the UK, work in the public non housing sector shows no real growth due to restrictions in available public finance. There is also a corresponding knock on effect with a reduction in the levels of repair and maintenance for public non-housing work.
- In Scotland there will be additional pressure on public finances due to the cost of the Forth Replacement Crossing project which is estimated at around £2billion.

[46] Construction Skills Network, 2010-2014 LMI Report
[47] Experian and SAMI Consulting, 2020 Vision – The Future of UK Construction, 2008

- Commercial and industrial new work, both very badly affected in 2009 start to recover, however, output levels in 2014 will still be similar to those seen in 2008 and there is no real growth.
- Infrastructure work continues to be an important sector with the Forth Replacement Crossing due to start and a number of proposed energy infrastructure schemes, such as the new power line through the Highlands and onshore and offshore wind farm projects.

When considering the relative balance of industry sectors this means that apart from the reduction in public non-housing sectors, the industry structure in 2014 will be broadly similar to that of 2010, see Chart 17 below.

Chart 17 - Construction Industry Sector Structure, Scotland 2010-2014



Source: Construction Skills Network; Experian

In terms of total construction output, between 2010 and 2014, output in Scotland is forecast to rise from £8.4billion in 2010 to over £9.3billion by 2014 (constant 2005 prices). This means that when looking at the industry sector structure for Scotland chart, each 1% equates to around £90million worth of construction output in current prices.

The core scenario recognises that although the UK construction industry is facing challenging times over the short-term, Scotland looks set to perform better than most areas of the UK for both construction output growth and employment growth.

From 2010–2014	UK	Scotland
Annual average construction output growth	1.7%	2.8%
Employment growth	4.0%	8.9%

Source: Construction Skills Network, 2010

As mentioned earlier, the Construction Skills Network takes a five year view when producing its forecasts, therefore projecting a core scenario forward to 2020 is not clear cut. The political implications around further devolved powers or possible independence also make it difficult to forecast with any degree of certainty, however the labour market projections from Futureskills Scotland[48] offer some valuable insight.

- There will be only a modest growth of employment levels in Scotland
- Job openings will mainly be to replace workers who are set to leave employment
- Scotland will experience less employment growth than the UK

[48] Futureskills Scotland, Labour Market Projections 2007 to 2017

- Employment is expected to shift towards public and private sector industries
- There will be more openings for jobs with higher qualifications

These points combined with the falling GVA noted towards the end of the Construction Skills Network forecasts indicate that although Scotland's construction industry looks set to outperform the UK over the next few years, after 2014 this may not be the case.

As pointed out earlier, forecasting is not an exact science and the UK report sets out some variations to the core scenario. When considering the implications for Scotland the most significant variation is likely to be linked to the extent that further powers are devolved to the Scottish Government and how this then links through to the Scottish economy.

Changes of this type would have wide ranging consequences for the way Scotland is governed and there would be an impact upon the Scottish construction industry in terms of employment and skills. Unfortunately primary research on which to forecast such a scenario for construction is not readily available, however it is an area that needs to be closely monitored with elections due this year for the UK and the following year for the Scottish Parliament.

What is interesting to note is the extent to which some of the variations noted in the UK report may or may not apply to Scotland.

1. **Double Dip Recession:** the opposite to a strong recovery where the fragile economy goes into a further recession. Given the prospects set out for Scotland in the short term, a double dip recession would appear to be less of an issue for Scotland than other areas of the UK, especially when even within Scotland areas such as Aberdeen have weathered the recession better, possibly due to the strong oil and gas industry. If there was to be a UK level double dip recession there would be an effect, however the risk for Scotland would be around the level of recovery after 2014 rather than the immediate short term effect, which would be the main UK risk.
2. **Low Carbon Transition:** this is more of a reality for Scotland as it looks to deliver on its Climate Change Delivery Plan. As such the low carbon transition variation will be the norm for Scotland, with the exception of building new nuclear power stations, as the Scottish Government has a definite anti-nuclear policy at present.
3. **Modern Methods of Productivity:** innovation and productivity drives increasing adoption of changes in working practice across all new build sectors, especially housing. As discussed earlier, improving productivity is a key issue, not only for the Scottish construction industry, but for Scotland in general. The Scottish Government is actively looking at skills utilisation[49] and boosting productivity is a key element of the economic[50] and skills strategies[51]. Productivity will therefore be a key element for the Scottish construction industry, and as with the low carbon variation, this scenario will be more of a norm for Scotland.

Having outlined the core scenario for the construction industry and identified that the variations set out in the UK report will be more like norms for Scotland, the following sections discuss their implications upon the demand for employment and skills.

[49] Skills Utilisation Literature Review, Scottish Government, 2008
[50] The government economic strategy, Scottish Government, 2007
[51] Skills for Scotland, Scottish Government, 2007

6.3 What is the likely demand for employment in the future?

When looking at the likely demand for employment, there are two main aspects to consider;

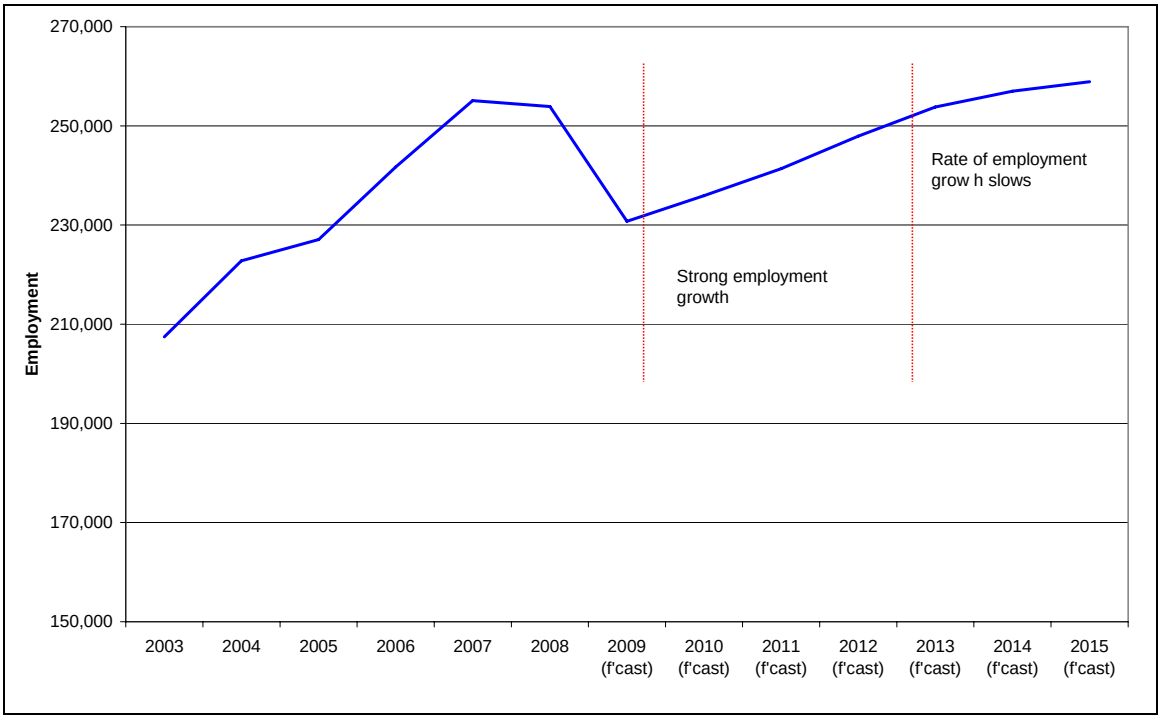
- overall industry employment
- employment balance across the different occupations, such as managers, professionals and skilled trades.

Each of these aspects will be discussed in relation to the core scenario .

Core Scenario

The recession and recovery outlined in the core scenario gives two distinct phases to industry employment as shown by Chart 18.

Chart 18 - Construction Industry Employment for Scotland, 2003 to 2015



Source: Construction Skills Network; Experian

From 2010 to 2013 Scotland is forecast to show strong employment growth, although this will still be at a lower rate that the rises seen in the last decade. After 2013 the rate of growth slows and it is likely that employment growth of around 1% per year would be experienced through to 2020.

Compared to the overall UK employment forecast, Scotland looks set to return to 2007 employment levels sometime around 2013 or 2014, which is considerably earlier than the UK forecast of no earlier than 2018.

For Scotland, employment will be driven by work in two sectors, housing and infrastructure. The strength of a recovery in the housing sector will be influenced by factors such as affordability and access to mortgage lending and at the moment it is difficult to judge how these will shape up in the legacy of the banking crisis. However meeting greenhouse gas emissions reductions targets will mean implementation of low carbon building standards along with a programme of improving energy efficiency of existing buildings.

With infrastructure the key driver here will be work around energy, particularly renewable energy for Scotland. There are programmes of work planned for wind, tidal and carbon capture and storage power schemes, along with associated grid as the Scottish

Government looks to meet its target of a 42% reduction in greenhouse gas emissions by 2020.

Overall employment trends tell only one part of the picture as there will be some movement in the balance of different occupations, which is related to skills as well. It is unlikely that there will be a significant shift in occupational balance with skilled trades remaining the dominant occupational group for the industry. There will be a trend for an increase in the amount of managerial, professional and technician occupations which is likely to continue through to 2020. While aspects of this trend will be due to factors such as increasing amounts of infrastructure work, occupational balance will also be influenced by skills demand which is covered in more detail in the next section.

6.4 What is the likely demand for skills in the future?

While the previous section discussed overall employment, the discussion around occupational balance also began to touch upon the skills demand, as the two are closely related. This section looks at specific factors that are likely to influence demand for skills in the future.

There is a clear, general demand for higher levels of skills, which comes from a range of sources:

- Improving general skill levels, boosting economic prosperity international competitiveness[52],[53],[54].
- With the current recession, leadership and managerial skills are increasingly being viewed as important[55].

Also, as mentioned earlier apprenticeships in Scotland have traditionally carried out to L3 where possible. This is very different to other areas of the UK where the bulk of apprenticeships are at L2, with progression to L3 at the discretion of apprentices/employers.

Table 9 below shows the current relative skill profiles for all industries and construction for the UK and Scotland.

Table 9 - Proportion of workers in industry (aged 25-64) by highest qualification level

	UK, all industries (2008)*	UK Construction (2008)*	Scotland, all industries (2008)*	Scotland, Construction (2008)**
% qualified to at least L2	71%	74%	76%	79%
% qualified to at least L3	51%	53%	55%	59%[#]
% qualified to at least L4	31%	26%	39%	27%

Source: *UKCES Almanac 2009, **Labour Force Survey (LFS)
Notes: [#] LFS data records Trade Apprenticeships and for Scotland an estimate has been applied to the number that would be achieved at L3, rather than L2.

These figures show that the profile for construction workers in Scotland is above that of UK construction, especially for L3 qualifications. It is also interesting to note that Scotland, all industry profile is above that of UK, all industry, especially for qualifications above L4. The biggest difference is between Scotland, all industries and Scotland, Construction for qualifications at L4 and above. This shows that construction has some work to do to raise the higher skill levels of its workforce.

[52] Labour Market Projections 2007 to 2017, Futureskills Scotland, 2007
[53] The Government Economic Strategy, The Scottish Government, 2007
[54] Skills for Scotland, The Scottish Government, 2007
[55] Emerging Stronger: CBI 2009

As mentioned before, responding to climate change legislation and improving productivity will be key drivers of demand for higher skills across the Scottish construction industry.

6.4.1 Climate change

In responding to climate change targets the implications for future skills demands are significant as very small imperfections in construction can have very substantial implications in meeting the energy standards. There would need to be considerable changes in attitudes towards construction techniques accompanied by an understanding of the impact of actions and inactions by an individual on the final energy certificate. Increasing demand on house builders to reduce the environmental impact of homes, in particular carbon footprints, will require a move to Innovative Methods of Construction, which is discussed in more detail later, to assist in the use of better materials and improve the quality of construction, particularly for air tightness and insulation. There will also be demands for new construction skills on-site driven by growth in the use of new equipment such as heat pumps, heat and water recycling and local micro-generation systems.

In addition of work around new housing, there will be a corresponding programme of work to retro-fit and upgrade existing housing stock. For Scotland and for the UK, houses that are currently built will be the main part of the housing stock.

The main skills demand issues will focus around understanding the building in which the new products are being installed. However as the work of ConstructionSkills' Future Skills Unit is beginning to show, this does not always mean a significant change in the current skill levels.

Where there does appear to be an issue is not with the current skill levels, it is the attention to details that is required when working with new technology and being familiar with the subtle adaptations that are required. For example ensuring airtightness or minimising cold bridging are two techniques that are used to improve energy efficiency and for both of these it is attention to detail rather than the underlying skills that would influence the eventual energy performance of the structure.

There would be an increased demand for low carbon design related skills to ensure that new buildings are designed for maximum energy efficiency, as well as an increase in multi-skilling to support the installation of some technology, such as photovoltaics which would require a combination of roofing, electrical and/or plumbing skills.

For energy infrastructure projects there would be a significant demand, particularly for engineering skills. Introducing power from renewable and low carbon technologies would be major infrastructure projects, not only to build the projects themselves, but to ensure that they could contribute to the national grid as well.

6.4.2 Improving productivity

Improving productivity for the construction industry effectively means either changing the processes by which it works by adopting modern methods of construction (MMC). MMC is a generic description of methods, many of which have been around for sometime, but are only slowly being used to a wider extent. MMC substantially uses off-site construction methods, bringing to site components that are relatively quick to install, although often involving specialist installation. The main advantages purported for MMC are reduced labour on-site; reduced skill demands on-site; and greater speed and lower cost of construction.

MMC are being used at the moment, Scotland is considered to be one of the main areas for the use of timber-framed housing, however to generate productivity improvements it is highly likely that the Scottish construction industry would have to apply more modern methods over all sectors of the industry

The main implications of MMC on skills demand in the future would be:

- Greater mechanisation and automation on-site. Much of this can be achieved by wider use of existing tools and techniques, such as lifting equipment. However it will have implications for a wider need for skills in craneage, lifting, handling large loads and logistics on-site etc.

- Off-site MMC will involve a very substantial shift of building skills from site to off-site. Depending on the level and extent of completion of finishes off-site, there might be a substantial reduction of bricklayers, plasterers, tilers, electricians, plumbers etc. on-site. Initially many of these trades will still be required in the off-site factories, but eventually, possibly rapidly, the level of skill needed will be reduced by the advantages of factory conditions and methods, in particular by having one skilled operator supervising a number of less skilled operators. Ultimately there appears to be the potential for even greater levels of automation, especially if large-scale production can be achieved through utilisation of processes and equipment developed in industries such as motor manufacturing.

- Computer integration of construction processes from design through construction to maintenance, which in turn implies a need for cross-disciplinary education for design teams. There will also be increased need for CAD trained building technicians to work on off-site design and application in factory conditions. An understanding of manufacturing methods will need to be combined with an understanding of construction methods.

- Fewer traditionally trade-oriented skills with more emphasis on multi-skilling. The new skills would appear to be along the lines of a better understanding of the composition and purpose of components and assemblies and how they can be moved and lifted.

- With a wide range of substantially different components, site workers will need a greater understanding of general building issues such as tolerances, air/water-tightness, and the interaction between components.

- MMC will require revised safety training for an environment with heavy lifting, greater heights, and more mechanised equipment.

- In general there will be a need for site supervisors and site labour that has an understanding of modern terminology, the ability to read, understand and follow instructions on new materials and components.

These changes in demand point toward a construction workforce that

- would be qualified to a higher level than at present, although this is already the case with Scotland's construction workforce
- would need a wider range of skills to handle a wider range of work
- requires some subtle changes in existing skills to meet the future demands of the industry
- and has the opportunity to apply these skills in the workplace.

There would also need to be a change in how the industry is supplied with these skills to ensure that workers have the right skills for future work, which is the detail covered in the next section.

Summary Box

This section will outlined what we saw as being the core scenario facing construction in Scotland through to 2014 based on assumptions around % GVA growth, % Construction growth, industry structure and construction industry characteristics for Scotland.

Our core scenario assumed that

- UK economy will emerge from recession in 2010 followed by a gradual recovery
- Scottish GVA will follow a slightly different pattern with slightly stronger growth than the UK over the short term before dipping below UK levels from 2013.
- Scottish construction output is forecast to grow strongly from 2010 to 2011, before dropping slightly from 2012 to 2014. Average growth over the period 2010-2014 will be 2.8% which is well above the UK average of 1.7%.
- New work will be the main drivers especially private housing and infrastructure
- Infrastructure work continues to be an important sector with the Forth Replacement Crossing due to start and a number of proposed energy infrastructure schemes.
- Work in the public non housing sector shows no real growth due to restrictions in available public finance.
- In Scotland there will be additional pressure on public finances due to the cost of the Forth Replacement Crossing project which is estimated at around £2billion.
- Commercial and industrial new work output levels in 2014 will still be similar to those seen in 2008, no real growth.

For industry employment levels this means that from 2010 to 2013 Scotland is forecast to show strong employment growth, although this will still be at a lower rate that the rises seen in the last decade. After 2013 the rate of growth slows and it is likely that employment growth of around 1% per year would be experienced through to 2020.

Compared to the UK, Scotland looks set to return to 2007 employment levels sometime around 2013 or 2014, considerably earlier than the UK forecast.

For skills, there will be some movement in the balance of different occupations, although it is unlikely that there will be a significant shift in occupational balance with skilled trades remaining the dominant occupational group for the industry. There will be a trend for an increase in the amount of managerial, professional and technician occupations which is likely to continue through to 2020.

Responding to climate change legislation and improving productivity will be key drivers of demand for higher skills across the Scottish construction industry. The UK report noted variations to the core scenario around climate change and modern methods of construction, these are likely to be the norm for Scotland.

These changes point toward a construction workforce that

- would be qualified to a higher level than at present, although this is already the case with Scotland's construction workforce
- would need a wider range of skills to handle a wider range of work
- requires some subtle changes in existing skills to meet the future demands of the industry
- and has the opportunity to apply these skills in the workplace

7. The future supply of skills and employment in the construction industry

7.1 Introduction

As a result of climate change legislation and the need to achieve energy security construction in the future will operate within a low carbon built environment and the UK government's chief construction adviser Paul Morrell has recognised the need to take an integrated approach to in its delivery, however there are warning signs that there is a lack skills in some areas. It is also likely that an integrated approach will require the emergence of multi-disciplinary practitioners as well as innovative and sustainable methods of working.

Construction innovation and sustainability both in the UK and Scotland is underpinned by the fact that the industry is made up of a series of 'sub-industries' whose common goal is to create and maintain the built environment. Given this complexity it is essential that associated solutions to the skills changes within these sub-sectors to meet their particular needs must be flexible and appropriate for their needs. For example new build housing will have different requirements from housing maintenance.

Two key themes emerge from changing construction products and processes; these are the growing requirement for integration, for example systems integrators and the extension of multi-skilling, especially during the on-site process. A better understanding of the skills and knowledge requirements of both are essential to inform training and qualification development.

Innovation and sustainability require the development flexible qualifications, this is especially true for the existing workforce, and to allow the transfer between construction, engineering and manufacturing skills. The Scottish Credit and Qualifications Framework (SCQF) will provide the opportunity for this approach by identifying progression routes and making credit transfer opportunities easier. This in turn should give a more flexible and responsive based approach to qualifications that recognises employer based training.

However having a more flexible and responsive qualification framework is only one aspect of the future supply of employment and skills for the construction industry. This section will consider other aspects such as demographics and changes to further and higher education that may also influence future supply.

In the short-term it is possible to say with some degree of confidence, that trends in skills and employment supply probably won't deviate a great deal from its current course. The main focus of this section will be the medium-term (the next five years up to 2014) and the long term (through to 2020).

As discussed in earlier sections, aspects such as the economy, industry, and politics will all have a bearing upon the demand of skills and employment for the construction industry, especially as following general economic principles, demand and supply are inexorably linked. Rather than discuss these factors again, this section will focus on two key areas;

1. Is there the volume of people to meet demand?
2. Changes in Skills System – will the people have the right skills?

7.2 Is there the volume of people to meet demand?

With the UK coming out of a sharp recession it may seem odd to ask where the people with skills to join the industry are likely to come from, however there are some aspects that are very important for the construction industry in Scotland.

There are three main routes of entry for workers to joining the construction industry:

- after training for a qualification, either at craft or professional level
- by moving into Scotland from another area of the UK or another country
- switching from other industries.

Taking the first of these points, people entering the industry from training, the main source here will be young people entering the industry from either school, further education or higher education, therefore population estimates for Scotland would give a good picture of what the future holds.

The General Register Office for Scotland[56] points to a number of key issues around Scotland's future population;

- overall population will remain relatively stable through to 2031, with only a marginal growth in numbers from 5.12m (2006) through to 5.37m (2031)
- Scotland's population growth will be the lowest in the UK, noticeably lower than that projected for England, Northern Ireland or Wales
- Scotland has an ageing population
    - +13% number of people aged 75 and over
    - +10% number of people aged 60 – 74
    - +14% number of people aged 45 – 59
- There are fewer young people
    - -9% number of children aged under 16

The report also notes that different areas of Scotland such as Inverclyde and Eilean Siar will face a decline on overall population while areas such as West Lothian, East Lothian and Perth & Kinross will experience growth.

For Scotland overall, this points to a reduction in the number of working age people available to enter all industries. For Scotland's construction industry, the ageing profile combined with less young people posses a significant challenge in how to attract and retain people into the industry. The employment projections set out in Section 6 indicate a growth in employment, certainly through to 2014 and at lower levels through to 2020, therefore there will be a strong replacement demand as workers within the industry come up to retirement, in addition to a demand around increased work levels. Meeting this demand will be made more difficult with the Scottish Government's Economic Strategy and desire to grow key sectors such as Finance and Business, Tourism, Creative Industries and the like, as construction will face stiff competition to attract workers from what will be a smaller pool of people.

Given the mobility of workers outline in Section 2 and the population trends that exist within Scotland, there is also the question as to whether the workforce of the future will be in the areas where work is likely to be located. This could be a key challenge around the renewable power plans as future sites are likely to be in remote areas.

With regards the second point, if it is not possible to meet the industry demand for workers from the indigenous population, then workers would have to be sourced from either other areas of the UK or abroad. Economic migration will happen as a matter of course, but this might also be stimulated, as either a temporary measure or a permanent solution to any identified shortage. The UK construction sector has benefited from

[56] Scotland's Population, General Register Office for Scotland, 2008

migration, most recently from the EU 'Accession 8 States', or the A8[57], and Scotland is no exception. Construction is, and always has been, a migratory industry and there is an expectation that people will go where the work is. This applies to both foreign nationals entering the UK labour market and UK citizens finding work across the country or even abroad.

Until the recession increasing demand for building opened up job opportunities for economic migrants and the prospect of continuous work made the construction sector an attractive proposition, particularly for transient and unattached workers. Consequently the construction sector, like many other sectors, has witnessed an increase in the use of migrant labour to fill temporary and emerging labour gaps, a process intensified by the expansion of the EU, but by no means limited to EU citizens.

Whilst surveys amongst employers and even data from the Labour Force Survey indicate that there has been a slowdown in the inflow of economic migrants entering the construction industry and suggest there has been an increased outflow, this is not necessarily people returning to their countries of origin. Some might choose not to migrate, but merely choose to move to another (more stable) sector. Under normal circumstances we might have seen much higher numbers returning to their home countries, at least for a time, or diverted to faster-growing emerging economies, but given that the economic slowdown is part of a global crises there are few places that haven't been affected, hence we have seen far less mobility. There is also the fact that some migrants will choose to settle for a longer period or make a permanent move.

Migration is perhaps the most difficult component of population change to measure; there is no comprehensive system which registers migration in and to the UK. Consequently, it is extremely difficult to get a full picture of the extent of migratory flows, however sector-specific research allows us to draw some tentative conclusions about the numbers of migrant workers in construction.

Section 2 showed that whilst the Scottish construction workforce is fairly self-contained with the vast majority of its construction workers originating from Scotland, (84%), it is estimated that about 2% of the site-based construction workforce are foreign nationals[58]. Further research in 2009 indicated that, at the time of interview, 4% of Scottish construction employers employed or had in the last 6 months a worker who is not a UK citizen or passport holder. This is broadly in line with previous research, with 5% reporting this in July 2008, although it is lower than the 8% reported in April 2008, which seems to reflect the suggestion that there has been a slowdown in the inflow of economic migrants entering the construction industry.

Official migration data produced by the General Register Office for Scotland shows that Scotland has historically been a country of net out-migration rather than net in-migration, that is more people leave Scotland to live elsewhere than move to live in Scotland. However, since the 1960s net out-migration has reduced significantly and in recent years Scotland has experienced net migration gains, particularly from overseas. In-migration from overseas has been increasing since 2002 and as of 2008 was at its highest level since the series began in 1991[59].

Whilst, there has been an underlying, long-term trend of decreasing net emigration from Scotland over the last 50 years demographic changes in the Scottish population, mainly resulting from an ageing population has been a cause for concern and a prominent

[57] The Accession 8 States are; Poland, Lithuania, Slovakia, Latvia, Czech Republic, Hungary, Estonia and Slovenia.

[58] ConstructionSkills and Central Office of Information, Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007

[59] General Register Office for Scotland, Scotland's Population 2008: The Registrar General's Annual Review of Demographic Trends: 154th Edition, National Statistics

policy driver. Consequently, for the latter half of the past decade has seen the Scottish Executive put in place and pursue initiatives to encourage inward migration of skilled individuals.

Prior to the introduction of the Scottish Executive's Fresh Talent initiative[60], which came into effect in the summer of 2005, then First Minister Jack McConnell had warned that, without action, Scotland's working-age population could fall below three million within a generation. Whilst the Fresh Talent initiative ended on 29th June 2008 when the UK government brought in a new Points Based System (PBS) for migration, the demographic challenges associated with low population growth remain.

The Fresh Talent initiative was driven by the demographic projections for Scotland and concern that an ageing population may affect the economic future of Scotland, together with a recognition of the benefits of a more skilled and diverse workforce. Whilst the introduction of the UK Government's PBS for migration into the UK has changed the status of Fresh Talent the aims of a managed migration system broadly remain the same, i.e. supporting the economic and social advancement of the nation.

Under the PBS this means that workers from outside the European Economic Area (EEA) will only be granted entry to live and work in the UK if individual occupations or job titles are sufficiently skilled to be included on the shortage occupation lists; if there is a shortage of labour within each skilled occupation or job; and if it is sensible for immigrant labour from outside the EEA to be used to fill these shortages.

For workers within the EEA it is likely that the UK will remain a draw, as opposed to other European destinations, despite the recession because of the attractiveness of the UK, including the perception that the UK is an easier place to 'get ahead' and be successful if you work hard.

It is difficult to predict the future movement of workers in and out of the UK or Scotland. However, in terms of the supply of future workers, as long as there is a migration system that is flexible enough to allow for the free movement of workers as they are required by industry, it is likely that a proportion of construction workers will tend to follow the work and it is likely that this will be an increasing factor for the Scottish construction industry.

The last point, bringing in workers with relevant skills from other industries, has in the past not been seen as a major issue. There has always been, and probably always will be a level of movement between industries as individuals career choices change through life. Factors such as the relative performance of different industries and previous experience will influence career choices, however the trend in the future does point to a closer link between the construction and manufacturing sectors that could make this cross industry movement more important.

However, bringing skills from one industry to another does not really contribute to the overall stock of skills, there will be those who choose to leave construction to work in other industries, and the employment projections made through the Construction Skills Network already factor this movement into the employment projections made for Scotland.

[60] The Scottish Government, Fresh Talent Scheme, http://www.scotland.gov.uk/Topics/Government/Promoting-Scotland/18738/FTwork1

7.3 Changes in the Skills System – will people have the Right Skills?

Having outlined where the potential workforce will come from in the future, this section examines how they will gain the skills to enable them to work effectively.

As mentioned previously, trends indicate that in the future the construction workforce,

- Will be qualified to a higher level than at present, which is already the case for Scotland. Although this raises a paradox in that the workforce will be qualified to a higher level, some jobs will require lower skills.
- Will need a wider range of skills to handle a wider range of work
- Requires some subtle changes in existing skills to meet the future demands
- And for Scotland in particular, has the opportunity to apply these skills in the workplace to improve productivity.

Before discussing these points it is worth noting that the current skills system within Scotland is very different from other areas of the UK.

- Scotland will retain Scottish Vocational Qualifications (SVQs) and operate under the Scottish Credit and Qualification Framework (SCQF) while the Qualifications & Credit Framework (QCF) will operate in England, Northern Ireland and Wales.
- The main apprenticeship qualifications within Scotland, backed by employer recognition, are carried out to SVQ L3, not L2 (England, Northern Ireland and Wales)
- For construction in Scotland, there is no full-time further education, unlike other areas of the UK.
- The Student Awards Agency for Scotland means that Scottish residents can obtain a grant to cover full-time tuition fees for universities in Scotland
- Public funding for higher education will have two funding streams, the General Fund for Universities and the Horizon Fund for Universities, with the Horizon fund being used to "incentivise delivery aligned to key Government strategies and priorities" (New Horizons, pg 29)[61]

These are just a few examples of the differences between skills system that operate within Scotland and other areas of the UK. Although there are genuine differences in the way that systems operate, the overall aim is the same, to equip people with skills that bring benefit to the individual, community, society and the economy. However the important element for Scotland will be the way that the Scottish skill system operates in the future as this will be the key determining factor in equipping industry with the skills that it will need.

For construction, Scotland has a recognised training culture that fosters skill development, probably linked to higher levels of direct employment, which the figures outlined earlier in report clearly show. This is supported by the changes that are happening within schools, further education and higher education and Scotland looks to have a framework that delivers the right skills. There is some anecdotal evidence to support this view as responses to questions around reasons for not training indicate that construction firms viewed their staff as being fully proficient[62].

What is clear though, both from the recent Skills in Scotland[63] and Skills for Scotland[64] reports is that the future skills system needs to be able to adapt to changes such as new working practices, introduction of new technology and new products, and to effectively deliver these skills to the existing workforce.

[61] New Horizons: responding to the challenges of the 21st century, Joint Future Thinking Taskforce on Universities, 2008
[62] Construction Scottish Sector Profile, Alliance of Sector Skills Councils, 2009
[63] Skills in Scotland, Futureskills Scotland, 2008
[64] Skills for Scotland, Scottish Government, 2007

In Skills in Scotland, employers cited the main concerns for skills gaps as being the introduction of new working practices, new technology and new products or services. With construction work in Scotland set to experience the impact of at least one, if not all of these aspects, addressing them through a flexible and responsive skills system will be fundamental to equipping the industry with its evolving skills needs.

As for who will need the training, Skills for Scotland points out that by 2020, over 70% of the workforce will be made up from people who already work in it. This means that equipping existing workers with skills is every bit as important, if not more important than attracting and developing the skills of new workers. In this respect Scotland will face the same challenges as the rest of the UK as there is a similar pattern for England, Northern Ireland and Wales with the majority of the workforce already working in the industry.

Where it does become more of an issue for Scotland is the ability to deliver skills over a wide geographic and mostly rural area. This will require collaboration between learning providers along with the use of information and computer technology (ICT), particularly around the development and use of e-learning or blended learning training. Innovative approaches using e-learning and blended learning have been developed for the construction industry in Scotland, placing it ahead of other areas of the UK. The future development of this type of approach to learning should help to reduce the geographical barriers to training that are a very real issue for the Scottish construction industry.

Having the right skills that are delivered to the workforce then leaves one issue that the Scottish construction industry will have to address, and that is being able to apply the skills to improve productivity – Skills Utilisation.

Skills utilisation has been mentioned in earlier sections, however as Skills for Scotland points out “Productivity matters.” (pg 11) and the Leitch Review of Skills highlighted “a disconnection between the Scottish skills profile which, overall, is better than the UK and our economic performance, which is poorer” (pg 11). This makes it a key issue for Scotland in general and the government’s willingness to explore this area marks it out as being a significant driver for skills supply that is significantly different from England, Northern Ireland or Wales.

Improving the use of skills in Scotland cannot fail to have an effect of the supply of skills, and therefore employment, to the construction industry. At the moment it is difficult to say exactly where this will lead as it is an evolving issue and productivity within the construction industry will be one of the elements that future research from ConstructionSkills will examine, along with future employment and skills. However in the past construction industry productivity has been shown to be complex and proved difficult to measure, especially in a simplified form. It is likely that in looking to improve skills utilisation, understanding construction industry productivity will be an essential requirement, and like the response to climate change, another area where the Scottish Government could be leading the way.

Summary Box

The future supply of skills and employment will be influenced by changes within the industry along with general demographic trends and the skills system itself.

Industry changes such as innovation and sustainability require the development flexible qualifications which supports the transfer of construction, engineering and manufacturing skills. The Scottish Credit and Qualifications Framework (SCQF) will provide the opportunity for this approach by identifying progression routes and making credit transfer opportunities easier. This in turn should give a more flexible and responsive based approach to qualifications that recognises employer based training.

Will there be the volume of people?

- overall population in Scotland will remain relatively stable through to 2031,
- Scotland's population growth will be the lowest in the UK
- Scotland has an ageing population
- There are fewer young people

This points to a reduction in the number of working age people available to enter all industries and for Scotland's construction industry, this posses a significant challenge in how to attract and retain people. There is also the question about whether the workforce of the future will be in the areas where work is likely to be located.

Demographic changes in the Scottish population have been a cause for concern and a prominent policy driver with the Scottish Government pursuing initiatives to encourage inward migration of skilled individuals. Scotland has historically been a country of net out-migration rather than net in-migration however, in recent years Scotland has experienced net migration gains which has been increasing since 2002, and as of 2008, was at its highest level since the 1991.

Will people have the Right Skills?

The current skills system within Scotland is very different from other areas of the UK.

- Scotland will retain Scottish Vocational Qualifications (SVQs) and operate under the Scottish Credit and Qualification Framework (SCQF)
- The Student Awards Agency for Scotland means that Scottish residents can obtain a grant to cover full-time tuition fees for universities in Scotland

Although there are differences the overall aim is the same, to equip people with skills that bring benefit to the individual, community, society and the economy and way that the Scottish skill system operates will be the key determining factor .

Future skills system needs to be able to adapt to changes such as new working practices, introduction of new technology and new products, and to effectively deliver these skills to the workforce. An issue for Scotland is the ability to deliver skills over a wide geographic and mostly rural area. Innovative approaches using e-learning and blended learning have been developed for the construction industry in Scotland, placing it ahead of other areas of the UK.

Having the right skills that are delivered to the workforce leaves one issue that the Scottish construction industry will have to address, that of being able to apply the skills to improve productivity.

8. Conclusions and Key Messages

8.1 Conclusions

The UK construction industry has not experienced as much pressure from external market forces since the early1980s and the spotlight is very much focussed on how it can adapt to the changes without undermining potential for recovery and future growth.

The same really applies to Scotland however, as the report shows, there are some key factors that are uniquely Scottish and will drive skills and employment demand in different ways to other areas of the UK.

Scotland has a different approach to training and development with a strong training culture. The difference between apprenticeships seen between Scotland and the UK, along with the Scottish Credit and Qualifications Framework (SCQF) are both examples of the very real differences that have been, and will continue to be evident. Also the overall skills base for construction in Scotland is notably higher than the rest of the UK, further emphasising the different approach to training and development.

However this strength raises the first key challenge for the Scottish construction industry and the wider Scottish economy in general. How does Scotland translate this higher skills profile into productivity growth for the industry and wider economy. Although productivity gains will be an issue for the UK construction industry, the Scottish Government's focus and desire to improve productivity is not as evident in other nations.

The second key challenge will be how the Scottish construction industry responds to and supports the Governments' wide range of legislation, policies and plans to reduce greenhouse gas emissions. In establishing the Climate Change (Scotland) Act, the Scottish Government set a precedent that no other country in the world has yet to follow, with a target of reducing emissions by 42% by 2020. This presents a tremendous opportunity for the Scottish construction industry with significant plans for power generation planned around renewable energy, such as wind, wave and tidal power, accompanied by grid infrastructure to ensure that energy is effectively delivered to all areas of the country (Scotland and UK). In addition to energy infrastructure developments, there will be programmes to improve energy efficiency of new buildings and the energy performance of existing buildings which present a different set of skills and challenges for the industry.

Developments in both of these areas, housing and infrastructure, will drive output and overall construction industry performance in future years. This is the general case across the UK however the relative importance of these sectors will be more prominent in Scotland and Scottish Government legislation will further emphasise the importance and priority that future work in these sectors will demand.

The third, and by no means the least key challenge that is unique to Scotland is question as to what range of devolved powers future Scottish Governments hold. This does apply with the other devolved nations, however in looking at the range of legislation that has been applied since devolution, Scottish Governments have arguably exercised a wider range of powers and this means a more "Scottish" approach. Although the future nature of devolved powers will decided by Westminster, it is clear from the National Conversation[65] that there is a desire for a greater range of devolved power, possibly even full independence. This would give future Scottish Governments more powers to drive an influence the overall Scottish economic and business performance in ways that could potentially be different from other nations. As such the question of further devolved powers will be a key factor in Scotland's future economic growth and hence the performance of the construction sector.

[65] Choosing Scotland's Future, A National Conversation, Scottish Government, 2007

These three challenges alone make a compelling case for change, not least because wider policy drivers demand improved performance. Driving this agenda forward will require a strength and commitment from a multitude of stakeholders and employers at every level. In order to maximise opportunities the construction industry will need to develop not only its technical capability but also its ability to interface with other sectors and work in tandem with multiple agencies. This will require a significant shift in the skills and competence of the existing industry as part of a major process of innovation.

In order to establish innovation and integration, the underlying skills and qualification structure needs to be examined, from entry through to high level, to ensure that the skills are backed by qualifications and, where necessary, accreditation and/or certification.

8.2 Key Messages

ConstructionSkills has identified four key themes that must be addressed if industry is to successfully operate in the current environment and exploit new and emerging opportunities:

- Preserving the skills base through the downturn and maintaining readiness for the upturn. As Scotland is set to benefit more in the short term than other areas of the UK, having a skilled workforce for the immediate future is going to be of paramount importance.
- Keeping the pipeline of talent flowing through targeted recruitment, supported by skills development and career progression. Here Scotland has an advantage with it's training culture and skills profile. Implementation of the SCQF will also assist in providing a flexible qualifications framework that supports development and career progression.
- Investing in the future by improving management and leadership skills and supporting the evolving areas of sustainability and innovation so that the industry is able to direct resources more effectively and fully realise new opportunities. For Scotland this links into improving productivity and skills utilisation as a key to overall economic growth. Although Scotland's skill profile is better than other areas of the UK, there is still work to raise this to the general levels for Scottish industries.
- Encouraging clients to invest in skills, particularly through public sector procurement practices and engagement in new training models. To support changes in the nature of future work, largely driven by Scottish Government polices around climate change, the Scottish construction industry will have to acquire new skills. Investing in skills and training is as important now as it has ever been to ensure that the construction industry is able to contribute to Scotland's future economic growth.

As markets develop, particularly in the adoption of new products and processes, companies - and especially small and micro businesses - will need to gain the leadership and entrepreneurial confidence and competence to discuss low carbon and sustainable issues with clients and suppliers. It is critical that businesses, across the construction and built environment supply chain, are supported, as appropriate, in relation to people development - this support may be in the form of advice, training and the time and financial resources required. ConstructionSkills together with the built environment Sector Skills Councils is well placed to support this.

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10. Appendix

10.1 ConstructionSkills' footprint, SIC 2003

SIC 45 Construction

SIC 45.1	**Site Preparation**
SIC 45.11	Demolition and wrecking of buildings; earth moving
SIC 45.12	Test drilling and boring
SIC 45.2	**Building of complete construction or parts; civil engineering**
SIC 45.21/1	Construction of commercial buildings
SIC 45.21/2	Construction of domestic buildings
SIC 45.21/3	Construction of civil engineering constructions
SIC45.22	Erection of roof covering and frames
SIC 45.23	Construction of motorways, roads, railways, airfields and sport facilities
SIC 45.24	Construction of water projects
SIC 45.25	Other construction work involving special trades
SIC 45.3	**Building Installation**
SIC 45.32	Insulation work activities
SIC 45.34	Other building installation
SIC 45.4	**Building Completion**
SIC 45.41	Plastering
SIC 45.42	Joinery installation
SIC 45.43	Floor and wall covering
SIC 45.44	Painting and glazing
SIC 45.45	Other building completion
SIC 45.5	**Renting of construction or demolition equipment with operator**

SIC 74 Other Business Activities

SIC 74.2	**Architectural and engineering activities and related technical consultancy**
SIC 74.20/1	Architectural activities
SIC 74.20/2	Urban planning and landscape architectural activities
SIC 74.20/3	Quantity surveying activities
SIC 74.20/4	Engineering consultative and design activities
SIC 74.20/5	Engineering design activities for industrial process and production
SIC 74.20/6	Engineering related scientific and technical consulting activities
SIC 74.20/9	Other engineering activities

Source: UK Standard Industrial Classification of Economic Activities, 2003, Office for National Statistics.
Note: Asset Skills (the SSC for Property and Facilities Management) has a peripheral interest in SIC 74.2 Architectural and engineering activities and related technical consultancy.
ConstructionSkills shares an interest in SIC 45.31 Installation of electrical wiring and fittings and SIC 45.33 Plumbing with SummitSkills (the SSC for the Mechanical and Electrotechincal Services).

10.2 ConstructionSkills' footprint, SIC 2007

SIC 41	**Construction of Buildings**
41.1	**Development of building projects**
41.10	Development of building projects
41.2	**Construction of residential and non-residential buildings**
41.20	Construction of residential and non-residential buildings
41.20/1	Construction of commercial buildings
41.20/2	Construction of domestic buildings
SIC 42	**Civil Engineering**
42.1	**Construction of roads and railways**
42.11	Construction of roads and motorways
42.12	Construction of railways and underground railways
42.13	Construction of bridges and tunnels
42.2	**Construction of utility projects**
42.21	Construction of utility projects for fluids
42.22	Construction of utility projects for electricity and telecommunications
42.9	**Construction of other civil engineering projects**
42.91	Construction of water projects
42.99	Construction of other civil engineering projects n.e.c.
SIC 43	**Specialised Construction Activities**
43.1	**Demolition and site preparation**
43.11	Demolition
43.12	Site preparation
43.13	Test drilling and boring
43.29	Other construction installation
43.3	**Building completion and finishing**
43.31	Plastering
43.32	Joinery installation
43.33	Floor and wall covering
43.34	Painting and glazing
43.34/1	Painting
43.34/2	Glazing
43.39	Other building completion and finishing
43.9	**Other specialised construction activities n.e.c.**
43.91	Roofing activities
43.99	Other specialised construction activities n.e.c.
43.99/1	Scaffold erection
43.99/9	Specialised construction activities (other than scaffold erection) n.e.c.
SIC 71	**Architectural and Engineering Activities; Technical Testing and Analysis**
71.1	**Architectural and engineering activities and related technical consultancy**
71.11	Architectural activities

71.11/1	Architectural activities
71.11/2	Urban planning and landscape architectural activities
71.12	Engineering activities and related technical consultancy
71.12/1	Engineering design activities for industrial process and production
71.12/2	Engineering related scientific and technical consulting activities
71.12/9	Other engineering activities (not including engineering design for industrial process and production or engineering related scientific and technical consulting activities)

SIC 74 Other Professional, Scientific and Technical Activities

74.9	**Other professional, scientific and technical activities n.e.c.**
74.90/1	Environmental consulting activities
74.90/2	Quantity surveying activities

Source: UK Standard Industrial Classification of Economic Activities, 2007 (SIC 2007), Office for National Statistics.
Note: Asset Skills (the SSC for Property and Facilities Management) has a peripheral interest in SIC 71.1 Architectural and engineering activities and related technical consultancy.
ConstructionSkills shares an interest in SIC 43.2 Electrical, plumbing and other construction installation activities with SummitSkills (the SSC for the Mechanical and Electrotechincal Services).

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