

Sector Skills Assessment for the Construction Sector 2010

ConstructionSkills Scotland Report

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1. Introduction

1.1 Background

ConstructionSkills is the Sector Skills Council for construction. As a partnership between CITB-ConstructionSkills, the Construction Industry Council and CITB-ConstructionSkills 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 covers the main findings for Scotland with separate reports available for the United Kingdom, England, Northern Ireland and Wales.

1.2 Current and Future Skills Priorities

Construction is an important UK sector 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 there is ongoing pressure to survive, but long term skills planning is essential.

Looking forward ConstructionSkills has identified four key priorities for addressing the future skills and productivity needs of Scotland's construction industry:

1. Attracting and Retaining Talent

- 1.1. Increase knowledge of and promote the construction industry to a diverse range of potential new entrants and their influencers
- 1.2. Work with stakeholders to influence school curriculum to meet the needs of employers, especially with regards to Essential Skills
- 1.3. Increase the value of new entrant qualifications amongst employers.

2. Developing Talent

- 2.1. Address skills gaps and shortages within the workforce, in particular, technical, practical and job specific skills
- 2.2. Encourage appropriate health and safety training, beyond the minimum required by legislation
- 2.3. Improve the literacy and numeracy levels of those in the industry
- 2.4. Increase skills in the area of sustainable construction and modern methods of construction
- 2.5. Increase the number of employees undertaking training and encourage individuals to train beyond the minimum level and that required by legislation, and to achieve the appropriate qualification.

3. Improving Business Performance

- 3.1. Increase employer and employee awareness of the economic benefits of training to encourage participation
- 3.2. Promote the need for suitably skilled staff for the upturn and skills for future growth
- 3.3. Improve management and leadership skills across the industry

4. Strengthening the Skills Infrastructure across Nations

- 4.1. Investigate ways to reduce the barriers to training experienced by employers.
- 4.2. Work with training providers to provide an appropriate range of relevant education and training which meets the needs of all employers, in particular specialist sectors
- 4.3. Continue to review qualifications, standards and training delivery for appropriateness.

1.3 Sector Definition

ConstructionSkills is responsible for the skills interests of employers in the construction sector, which covers business activities related to the planning and design of buildings and structures through to their construction and maintenance. In this respect ConstructionSkills represents a wide variety of business types and occupations, from construction contracting firms to professional consultancies, and their workforces of craft trades through to building professionals.

The sector covers both private and public organisations with a wide range of business from sole traders and micro-businesses, through to small and medium-sized enterprises, and up to large national and international conglomerates. However, the one common tie that binds them together is the creation and maintenance of buildings and structures.

The ConstructionSkills footprint is defined using Standard Industry Classification (SIC) codes, details of which can be found in Appendix 9.3 and 9.4. This assessment uses both SIC 2003 and SIC 2007 due to the fact that whilst many of the national statistics now use SIC 2007 not all historical data is available using these definitions.

ConstructionSkills is fairly well served in terms of SIC codes reflecting activity and sub-sectors, although there are limitations in respect of data analysis. Whilst SIC codes exist it is not always possible to access or analyse data in such granularity. It should, therefore, be recognised that throughout this report the information collected and analysed from national surveys does not always reflect the ConstructionSkills footprint to the desired level of detail. Every effort has been made to provide alternative meaningful analysis and the constraints and limitations of such analysis are clearly noted.

Aside from SIC codes the industry is as much defined by the type of work undertaken by those operating within it. Indeed, the related terminology and descriptions are widely used and recognised by both the industry and agencies collecting data on industry activity, including the Office for National Statistics. Data on new orders and output is collected, analysed and disseminated using these specific definitions related to the type of work, details of which can be found in Appendix 9.5. These definitions have common currency amongst employers within the sector as well as commentators, and are used widely throughout this assessment.

In addition to classifying the sector by SIC and type of work, some activities within construction are better defined using Standard Occupational Classifications (SOC). This is particularly true of activities within specialist contracting sector and professional services sector. However, it should be noted that whilst SOC codes are useful in illustrating the breadth and depth of occupational activity they do sit across several SIC codes, making it difficult to use SOC codes to identify the size of the sectors. Details of ConstructionSkills' SOC footprint can be found in Appendix 9.6.

1.4 Research Methodology

The Skills Assessment brings together bespoke analysis of existing data, such as that held by the Office for National Statistics (ONS), the results of research commissioned by ConstructionSkills, and a desk-based review of existing research. As such this report presents a comprehensive review of the available Labour Market Information (that is, descriptive data, such as statistics or survey results) and Labour Market Intelligence (which includes analysis, interpretation, conclusions and policy recommendations).

Desk-based Review

In addition to the systematic analysis of official data ConstructionSkills has investigated numerous available sources of information regarding skills and employment issues, including nationally available data from the various national skills surveys, Government departments, acts and reports, and public policy forums. This has been further supplemented with extensive searches of market reports, news feeds and opinion pieces.

Whilst these searches provide much useful information, it tends to be background material or in some cases lacks the desired currency. For this reason ConstructionSkills regularly consults with industry commentators and recognised experts in the field of economic forecasting and futures thinking. Consequently, for the production of this report the desk-based review was widened to include interview consultations and personal communications with relevant individuals.

ConstructionSkills also consults with a number of stakeholders and employers via the Construction Skills Network (CSN) Observatories, which were being undertaken during October and November in parallel with the production of this assessment. This consultation allowed ConstructionSkills to test scenarios, gauge current levels of activity within the sector, and reality check anecdotal information. The Observatories provide a number of benefits not least gathering employer reaction on current and future issues.

Primary Research

In recognising there is already a wealth of existing labour market and skills information ConstructionSkills' primary focus is, first, to pool, interrogate and synthesise the existing research and literature to learn as much as possible from the current knowledge base. Only then does ConstructionSkills undertake new primary research, in areas where gaps have been identified and current information is inadequate and/or needs up-dating. In this sense ConstructionSkills seeks to achieve an appropriate balance between fully exploiting existing evidence and undertaking new research.

ConstructionSkills undertakes a comprehensive annual programme of primary research designed to supplement and expand on the existing evidence-base and information that might be gleaned from secondary sources. The programme of research comprises projects based on identified needs with priority given to more strategic issues having a wide impact.

ConstructionSkills' primary research can be divided into four main categories of activity:

1. Employer skills surveys focussing on both current and future skills needs.
2. Forecasts of labour and skill requirements
3. Consultation with employers and other stakeholders on key issues and priorities, such as economic, demographic and technological change.
4. Evaluation and benchmarking of sector performance.

Details of the primary research sources utilised in the production of the Skills Assessment are presented in Appendix 9.7. This provides further details on the sources used in the compilation of this report together with specific methodological detail, including sample size and coverage.

1.5 Structure of the Report

The Skills Assessment is divided into six main chapters:

Chapter 2 presents a comprehensive profile of the construction industry using official statistics allied with the findings from primary research commissioned by ConstructionSkills. The data describes the size and structure of the sector in terms of economic contribution, workforce size and business numbers, and the sector characteristics in terms of sub-sector activity. Building on this description of the sector the chapter details the factors driving the demand for skills, the performance of the sector, and the skills implications.

Chapter 3 considers recent trends in the supply of skills, focusing on key areas of supply relevant to the construction industry, namely education and training, skill levels, mobility and migration.

Chapter 4 details the demand and supply of skills, highlighting areas of potential mismatch. This chapter utilises evidence from ConstructionSkills' Skills and Training Survey 2009 to supplement the Scottish Employers Skills Survey 2010 to present an assessment of skills needs.

Chapter 5 examines the evidence for what are expected to be the main drivers for skills change in Scotland's construction industry, and what implications these may have for the types of skills that firms will need to operate successfully

Chapter 6 explores the likely demand for employment/skills in the future, presenting a vision of the future for the construction sector by looking at the drivers that are likely to impact on the skills demand and providing an outline of the resultant demands in terms of employment and training requirements.

Chapter 7 assesses the future supply of skills and employment in the construction industry. Drawing on demographic trend data, government policy, and industry developments this chapter presents the likely impact of skills demand on employment and outlines the principle sources of skills and employment to the construction sector.

Chapter 8 develops the conclusions that have been drawn from the Sector Skills Assessment and highlights the key messages.

2. What are the Factors Driving the Demand for Skills?

2.1 What Drives Skills Demand?

2.1.1 Contribution of the Sector

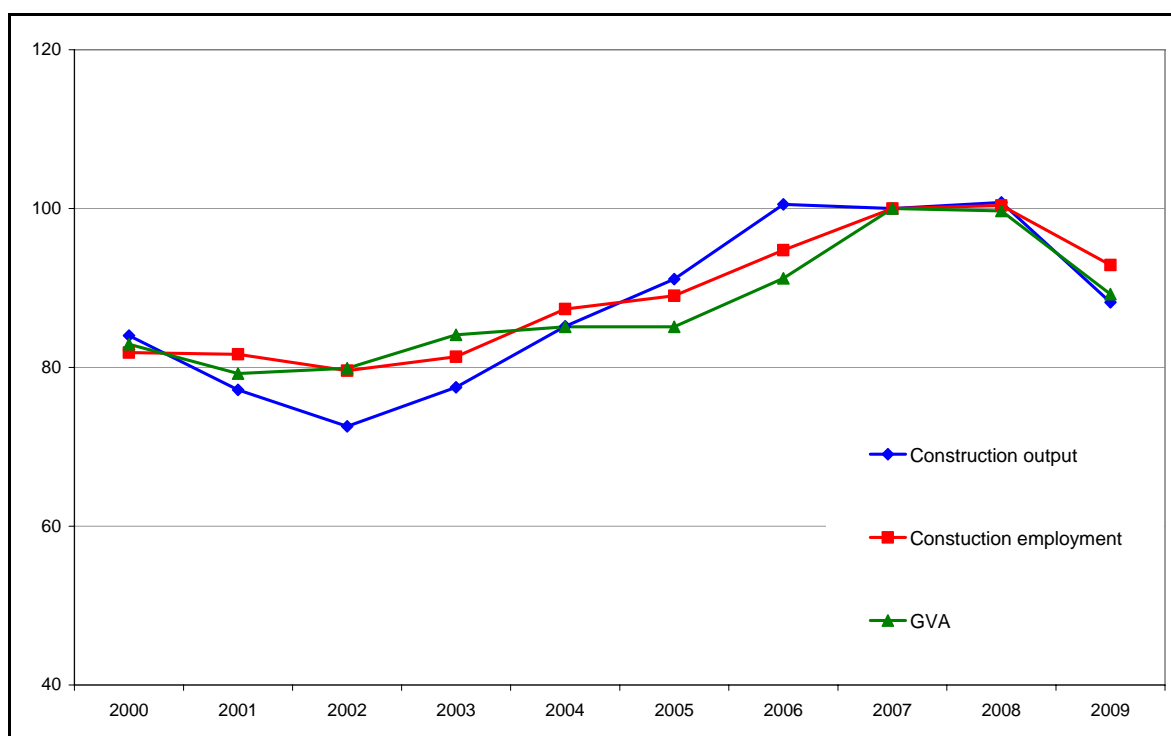
ConstructionSkills covers a wide range of activities in terms of the planning, design, construction and maintenance of the built environment, otherwise known as an SSC's footprint. Appendix 9.3 and 9.4 provide a full description of ConstructionSkills' footprint, defined by both SIC 2003 and SIC 2007 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. Employing 2.17¹ million people the combined employment of construction workers and professionals accounts for 7.5% of the UK workforce, and with an output in 2010 of £103billion (at constant 2005 prices)² the sector contributes approximately 8.5% of the UK's GDP.

For Scotland in 2010 the sector employed just over 204,000 workers across the contracting and professional services sectors, and generated an estimated output of nearly £9.6billion, at constant 2005 prices. This means Scotland's share of the UK's overall construction workforce is 9.4%, 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 largely influenced by the overall performance of the Scottish economy.

Chart 1 – Index (2007 basis) of Construction Output, Employment and GVA: Scotland, 2000–2009



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

¹ Office for National Statistics, Labour Force Survey, Spring 2010

² Construction Skills Network Model; Experian

From 2002 to 2008 the employment trend has been for growth apart following a minor fall in GVA, output and employment between 2000 to 2002. However, Chart 1 illustrates the severity of the recession from 2008 and the level of falls recorded in GVA, construction output and employment that the sector has had to face over the last two years (2009 and 2010).

2.1.2 Structure of the Sector

As noted in 2009 SSA Report a feature of the sector is that there are a relatively small number of large firms and a long tail of small and micro firms. This pattern is replicated in Scotland where there are approximately 20,840³ enterprises⁴ of which 90% employ fewer 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. The number of enterprises recorded in 2010 is lower than in 2009, almost certainly due to recessionary effects, although the size distribution has not altered significantly.

Table 1 - Employment within ConstructionSkills' Footprint (SIC 2007), Scotland: 2010

Size of Enterprise (Number of Employees)	Enterprises	
	Number	Percent
0-9	19,000	91.2%
10-49	1,550	7.4%
50-249	250	1.2%
250+	40	0.2%
Total	20,840	100%

Source: Office for National Statistics, UK Business - Activity, Size and Location 2010.

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 36% of workers within the industry are self employed⁵. There is also a tendency for career progression to lead towards self-employment, particularly in the main construction trades. However Scotland has some significant differences;

- the level of self employment is noticeably lower within the Scottish construction industry, at 22%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

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 2010

⁴ Based on VAT trader and PAYE employer information

⁵ Office for National Statistics, Labour Force Survey, Spring 2010

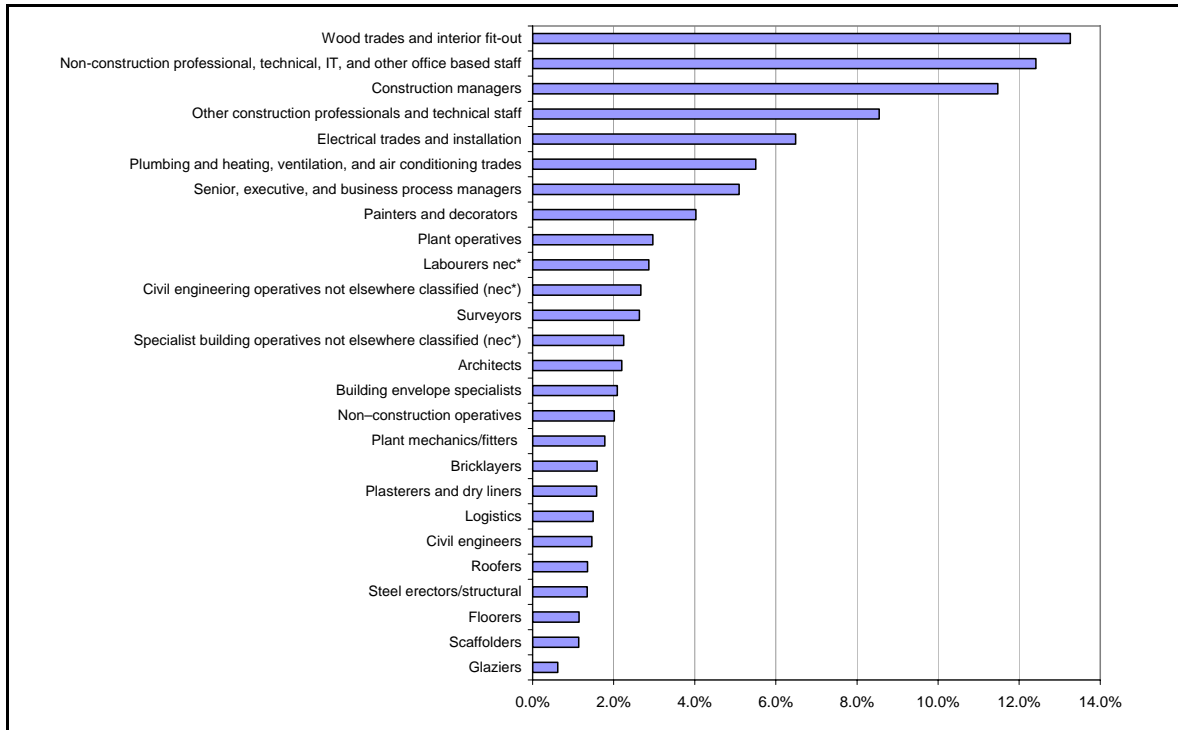
⁶ Office for National Statistics, Labour Force Survey, Spring 2010

⁷ ConstructionSkills and Central Office of Information (2007), Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland

2.1.3 Employment Characteristics

In terms of occupational structure, Chart 2 below gives a breakdown using the Construction Skills Network occupational groups, with no significant changes from previously reported patterns.

Chart 2 - Construction Employment by Occupation, Scotland: 2009

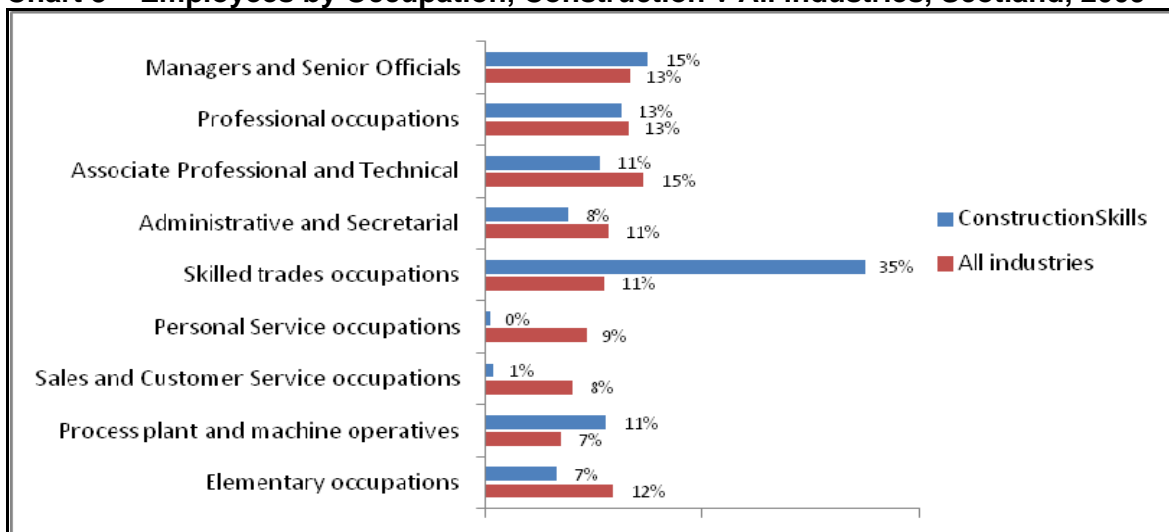


Source: Construction Skills Network Model; Experian

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, 2009



Source: Alliance of Sector Skills Councils, Annual Population Survey 2009

Both Chart 2 and Chart 3 clearly show the importance of skilled trades to the Scottish construction industry with 35% 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/region⁸.

By contrast those working in Scotland were more 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, which is illustrated by Chart 1 and recent changes in employment levels. The construction industry has in the past recessions 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 as it gathers pace.

⁸ ConstructionSkills and Central Office of Information (2007), Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland

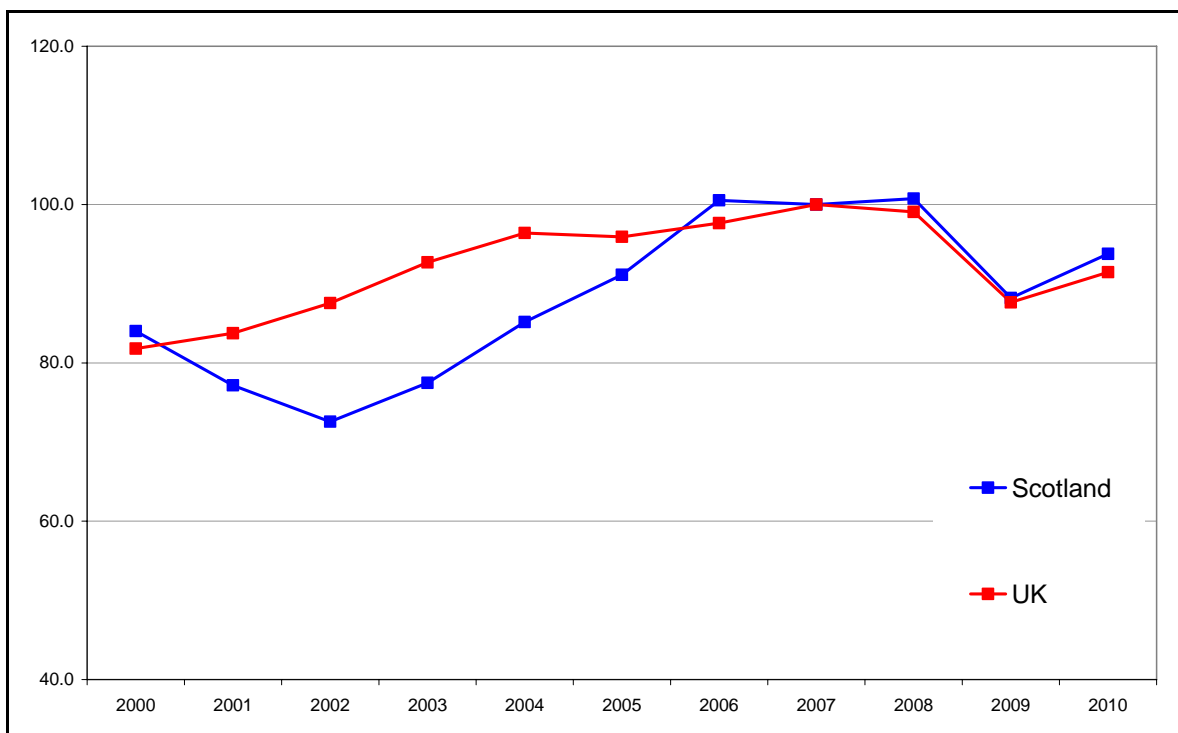
2.2 Current Performance - What is Driving Change?

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.

Although Scotland technically entered recession slightly later than other areas of the UK⁹, this did not prevent output dropping by a similar level to the UK as Chart 4 below illustrates. After under performing against UK levels from 2001 to 2005, construction output in Scotland has been close to that of the UK from 2006, with signs of a slightly stronger recovery in 2010.

Chart 4 – Index (2007) of Construction Output, Scotland v UK: 2000 – 2010



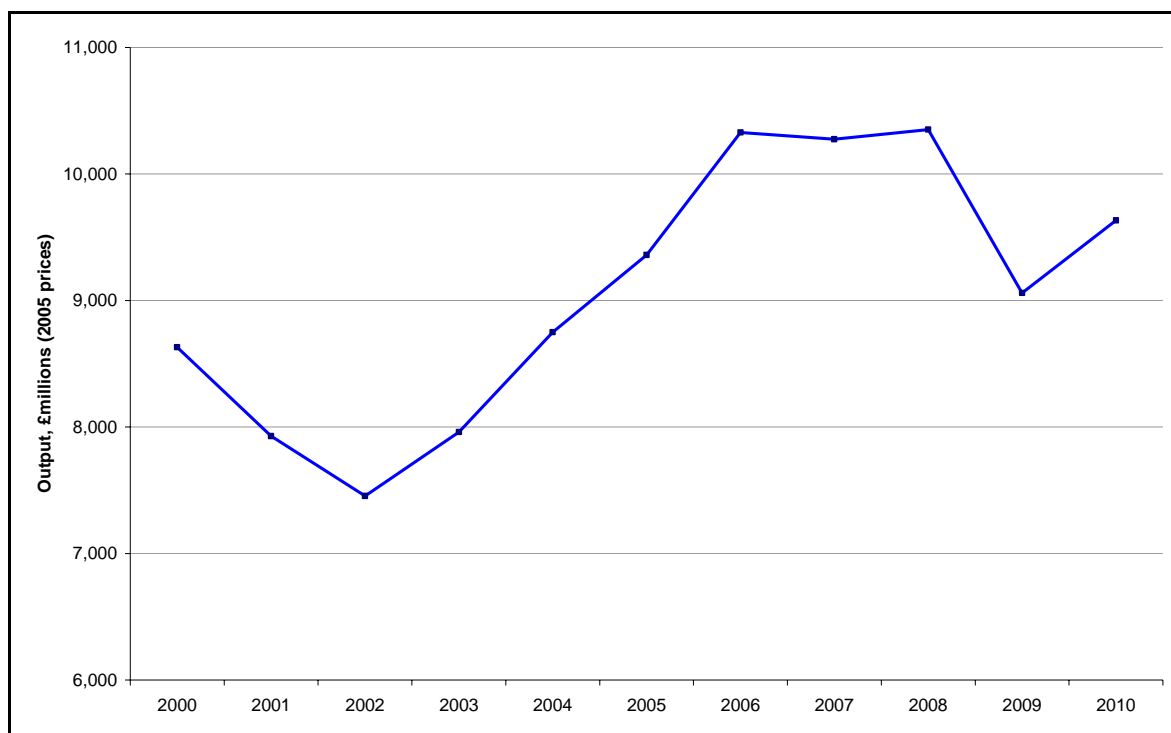
Source: Construction Skills Network: Experian

This better performance in 2010 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 with output falling by over £1 billion in a single year, although as mentioned earlier this was 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 (2011) Construction Skills Network, Scotland 2011-2015

Chart 5 - Construction Output in £m (2005 prices), Scotland: 2000-2010



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 but none less devastating in its impact on employment and employment opportunities.

2.2.2 Current Activity

Despite the recession the construction industry contributes around 7.0% of Scotland's GVA¹¹, slightly lower than the UK value of 8.5% of GDP¹².

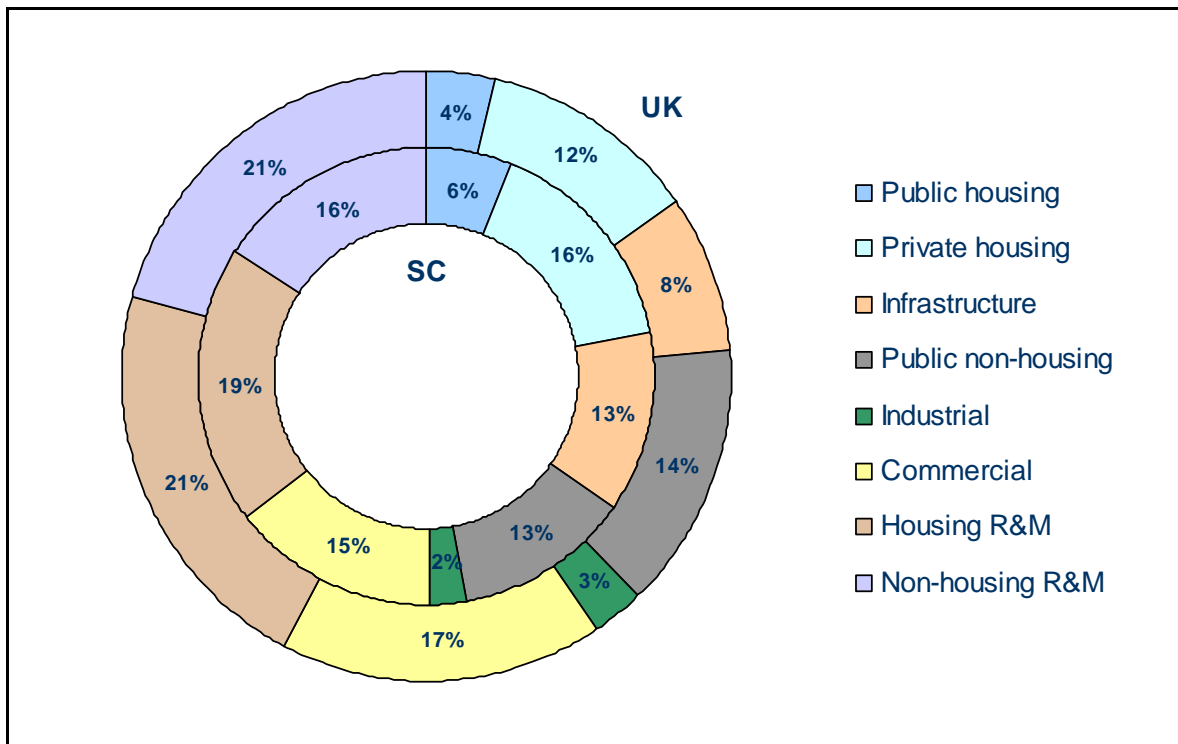
Chart 6 shows how the structure of the industry in Scotland compares to the UK and there are some notable differences.

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 6 – Construction Industry Structure, UK v Scotland (SC), 2009



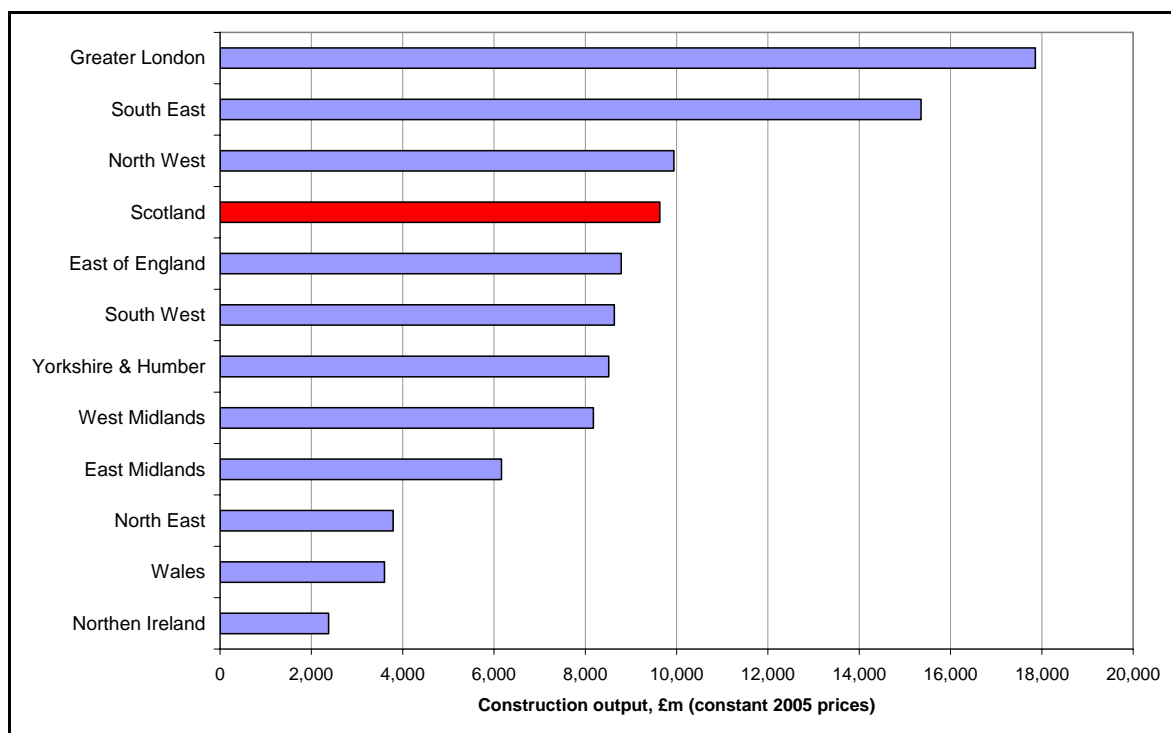
Source: Office for National Statistics; Construction Skills Network; Experian

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, M80, and Edinburgh tram scheme. These projects have helped to keep construction output high in this sector and with major projects such as the Forth Replacement Crossing starting and future work being planned for the Borders Railway and M8 extension, infrastructure work looks set to remain an important sector for Scotland, bucking the recessionary trend seen across other sectors.

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 repayment that is the problem in obtaining mortgage finance but the size of the deposit required. This applies as much to existing property owners as it does to first time buyers in terms of creating demand. With households still heavily indebted and real wage growth in decline, the prospects of growth in the short-term are extremely optimistic.

In terms of where Scotland ranks for construction output compared to other areas of the UK, Chart 7 shows that for 2010 it is forecast to be 4th out of 12 (the three devolved nations and nine English regions), with output above the UK average value of £8.6billion (2005 constant prices). Looking back over previous years, Scotland has remained in an upper-mid table position, while Greater London and the South East of England have remained the two regions with the largest output.

Chart 7 - Construction Output by Country and Region in £m (2005 Constant Prices), United Kingdom: 2010



Source: Construction Skills Network; Experian

Note: 2010 is an estimate

2.2.3 Constraints on Activity

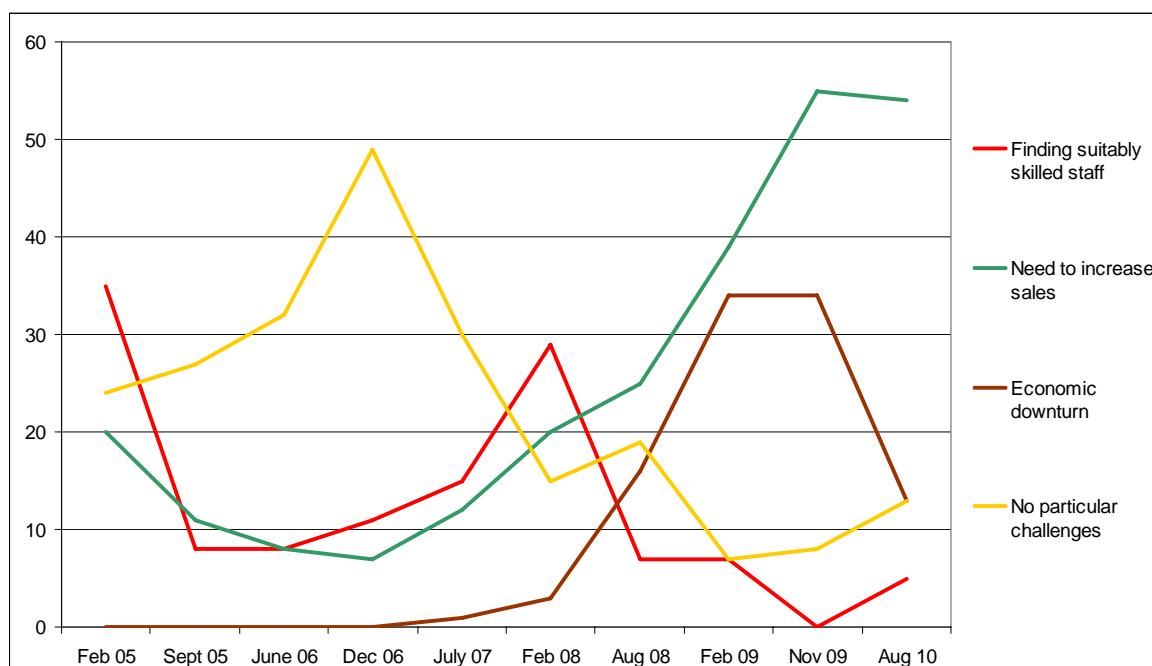
The volume of construction activity, even at a UK level for construction is highly cyclic and there are also significant in-year variation with seasonal peaks and troughs corresponding to external constraints such as lack of demand, labour shortages, poor weather and materials shortages. For Scotland 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 8. The effects of the recession are still being felt with over 50% of firms reporting a need to increase sales, a slight drop on figure reported in the research carried out the previous year, although still far higher than pre-recession levels. As reported previously¹³, demand tailing off has created excess capacity and all but removed the constraints around finding suitable skilled staff, between 2009 and 2010 there has been an increase in firms reporting finding suitably skilled staff as a constraint, however the level is still very low at around 5%.

What is notable is the drop in the firms seeing the economic downturn as a constraint, which has more than halved since 2009. This trend is possibly due to a combination of the weak growth shown in output during 2010 and also firms feeling they are over the worst of the recession.

¹³ ConstructionSkills (2010), Sector Skills Assessment Report, Scotland 2009

Chart 8 - Constraints on Activity, Scotland: 2005 - 2010



Source: Construction Employer Panel, Wave 10, ConstructionSkills

Similarly results recently reported by the Scottish Employers Skills Survey¹⁴ showing that cash flow attracting new customers and keeping existing customers were the main challenges anticipated over the next 12 months along with the downturn in the economic climate.

2.2.4 Geography and Mobility

The geography of Scotland presents a unique challenge in the UK, particularly in respect of workforce mobility¹⁵.

- 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 archipelagos¹⁶.
- 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.

¹⁴ Scottish Government (2011), Skills in Scotland 2010

¹⁵ ConstructionSkills (2007), Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, Overall Report

¹⁶ Wikipedia, http://en.wikipedia.org/wiki/Geography_of_Scotland

There are three main regions within Scotland;

- Highlands and Islands
- 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 (with the exception of Northern Ireland) Scotland has a more insular workforce than other area of the UK. Indeed, it has one of the highest patterns of workers who originate from, reside in and work within the construction industry¹⁷. 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 research¹⁸ suggests that Scottish workers are 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 the workforce tends to work in a more discreet manner in terms of their geographic coverage. This may relate to the physical distances between projects and conurbations as much as any cultural reasons.

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. 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.

The recent recession has shaken a lot of weak firms out of the sector and some companies have used this as an opportunity to reorganise and innovate. Levels of competition have increased significantly, margins have been reduced and diversification is rife as contractors fight for work. This has resulted in firms looking to generate the maximum return on all potential projects, producing an opening for technological and process change. Furthermore, it is becoming evident that much of the change is being driven by emerging opportunities around the low carbon economy.

Over a third (36%) of companies questioned on ConstructionSkills' Employer Panel¹⁹ had laid staff off because of the recession with nearly a quarter (24%) changing the focus of their work on different parts of the market in response to the recession. 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.

¹⁷ ConstructionSkills (2007), Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland

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

¹⁹ ConstructionSkills (2010), Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10)

In terms of recovery there will be a renewed emphasis on ensuring efficient working and a need to achieve more with less. This presents an opportunity for product and process innovation, with the long-term ambition to drive up productivity, and this could potentially 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. This is expected to continue moving forward, and will probably gather pace as out-of-sector and mainstream technologies are adapted for use in construction, both in terms of process management and production.

The shift towards off-site manufacturing means that on-site construction will continue to become 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. 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 non-manual trades as 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. Management and supervisory skills will become increasingly important. Improved business management, personnel and training will be required to support changes in industry structures and technology.

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 application of lean principles of construction and just-in-time logistics supported by IT will enable contractors to extract every possible efficiency from the production and build process.

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 time is compressed and individual operations become more critical. Transport and handling will require higher skills.

As with all industries the growth of ecommerce has over the last decade transformed the way businesses operate. It's likely that ecommerce will remain an important driver over

the next decade. Greater use of mobile technology for example smart phones will offer opportunities for improved integration of site information, such as material supply allowing improved management and efficiency.

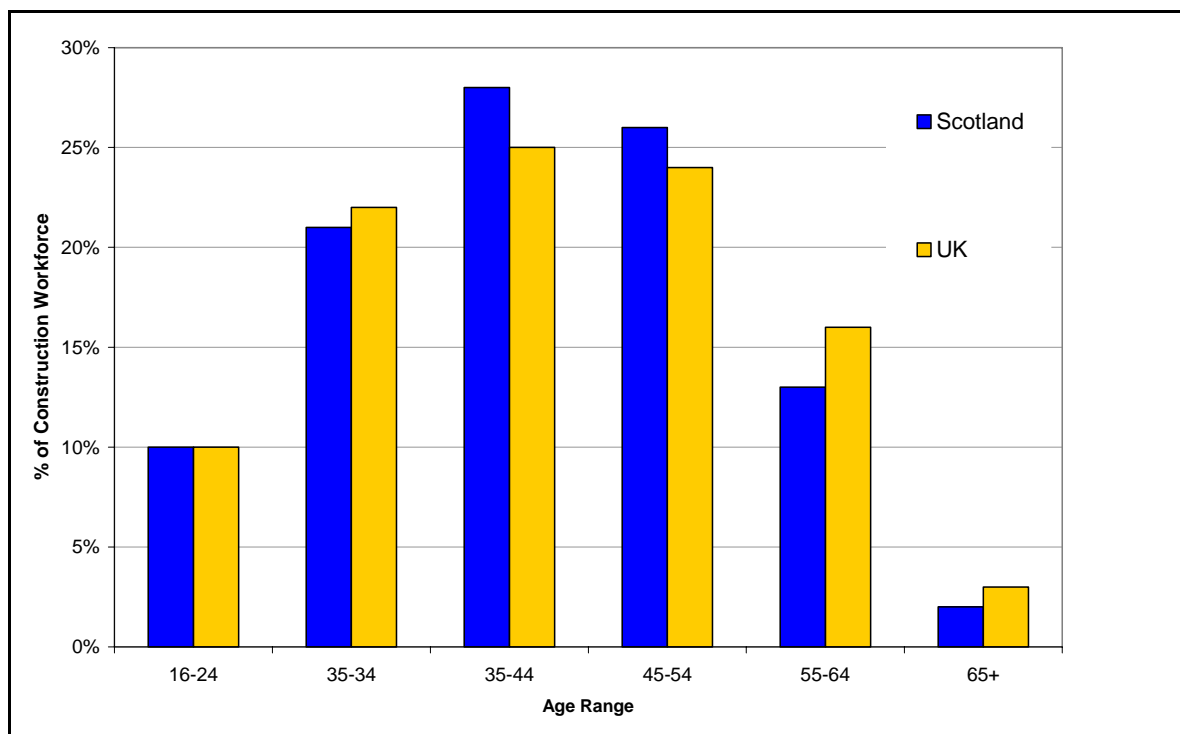
Many of these changes have, of course, already begun, and will continue in an evolutionary way to affect how tasks are performed on site and what skills are required of the workforce as a whole. However, it is important to reflect on how this will be adopted by the sector. Many (if not all) of the major firms in the sector are already applying these principles to their businesses and such innovations will filter down through their supply chains, but large swaths of the sector will not immediately be exposed to such innovations, particularly the long tail of small and micro firms.

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 9, and compares Scotland against the UK.

Chart 9 - Age Profile of Construction Industry, Scotland v United Kingdom: 2010



Source: Office for National Statistics, Labour Force Survey 2010, SIC2007

Scotland's profile exhibits some subtle differences to the UK view with slightly higher proportions in the mid-range age bands, while noticeably lower in the upper age bands of 55-65 and 65+. This indicates that while Scotland's construction industry is attracting young people at a comparable rate to the UK view, it might also be less susceptible to losing skills through workers to retirement over the next ten years.

Although the wider picture across Scotland is comparable with other Scottish industries²⁰ in Scotland, there are also some notable general demographic differences that will affect

²⁰ Alliance of Sector Skills Councils (2011), LMI Profile - ConstructionSkills

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 passed 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 2010 Scottish Government also published the “Conserve and Save”, the Energy Efficiency Action Plan along with the Low Carbon Economic Strategy for Scotland, which sets the framework for actions as to how the targets will be achieved, which will act as a driver 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 economy²¹. 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.

2.2.8 Consumer Demand

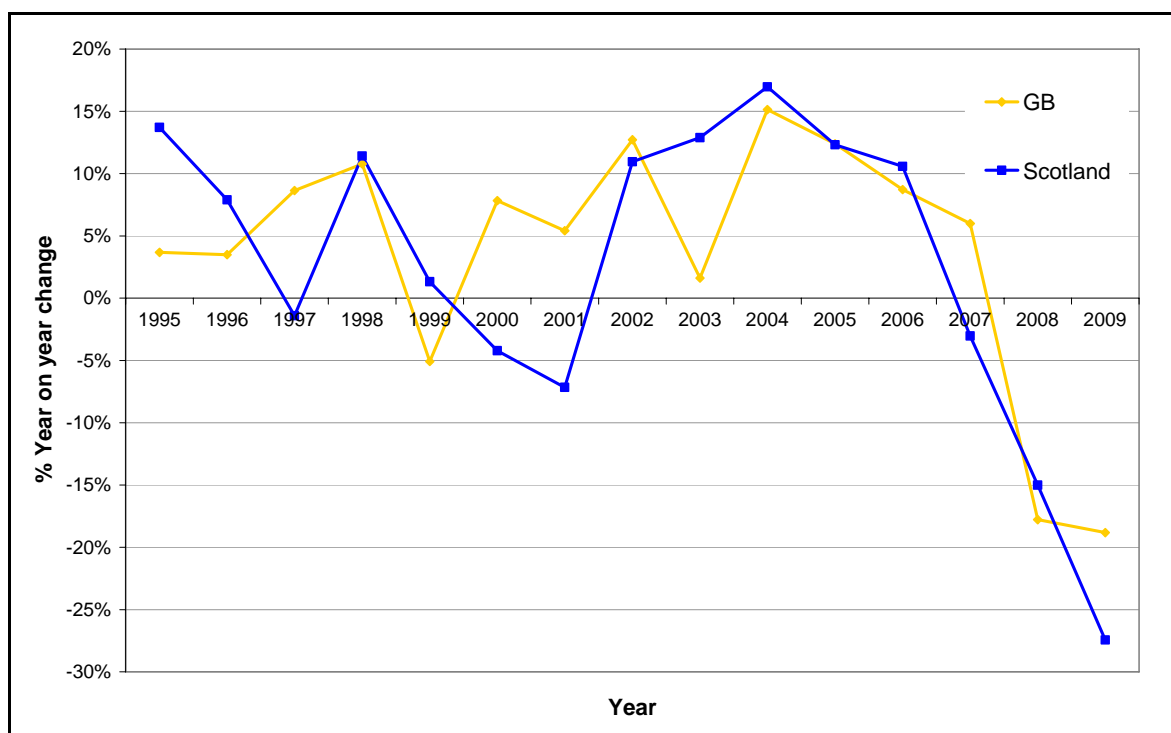
The construction industry in Scotland has a broad client base, all of whom have different demands and expectations and to some degree this is reflected in the fragmented nature of the industry. In this respect the sector might be better described as a collection of separate industries. Certainly the 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.

Chart 10 shows new construction orders in Scotland declining by 15% in 2008, though slightly better than the GB figure of nearly -18%, followed by a further fall of in Scotland of -27% in 2009, noticeably lower than the corresponding GB figure of -19%. Again this

²¹ Scottish Government (2009), Climate Change Delivery Plan

illustrates the severity of the recession, particularly for the new work sectors of the construction industry within Scotland.

Chart 10 – Annual Change in Construction Orders, Scotland v Great Britain, 1995 to 2009



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.

Table 3 shows how falls in demand have affected the different sub-sectors of new work with commercial and housing in Scotland suffering the most as a result of the downturn with significant drops in orders²². Combined, both of these sectors represent nearly half of new orders placed in Scotland during 2009. Industrial orders have also been significantly affected, however the proportion of new orders in the sector is far lower, at around 5% in 2009.

Table 3 – New Work Construction Orders, Scotland, 2005 – 2009 (Current Prices)

	Actual	Annual % change				
	2009	2005	2006	2007	2008	2009
Public housing	390	-1.2	31.4	19.8	10.9	-9.9
Private housing	714	3.0	-23.6	3.1	-27.0	-40.3
Infrastructure	775	-8.0	-7.1	42.2	56.0	-36.6
Public non-housing	1,160	48.9	-11.7	-6.9	-1.7	10.7
Industrial	226	49.0	4.1	-9.7	-16.4	-32.0
Commercial	1,011	8.2	69.7	-14.3	-37.5	-39.2
Total new work	4,277	12.3	10.6	-3.0	-15.0	-27.4

Source: Construction Skills Network, Experian

Only the public non-housing sector saw an increase in new orders, of nearly 11%, but this was after three years of contraction and from a relatively small base, thus the outturn in 2009, at £1.16bn, was only 89% of the 2005 peak.

²² Construction Skills Network, Experian

In contrast, private housing and commercial new orders fell by around 40% apiece, and the infrastructure sector by nearly 37%, although the latter experienced two very strong years in 2007 and 2008.

New construction orders totalled £2.49bn in current prices in the first half of 2010, a 23% increase on the previous half year and up by 10% compared with the corresponding period of 2009. The most buoyant sector in terms of new orders was industrial. Its first half outturn of £259m was the strongest since the same period in 1997 and was nearly three times the new orders level in the first half of 2009. The public housing and public non-housing sectors also saw rises in the level of new orders compared to the two preceding half years.

In contrast, new infrastructure orders, at £334m, were down by 17% against the previous half year and 11% compared with the corresponding period of 2009. However, the sector is coming off from a period of sustained activity in term of the number of new orders between 2007 and 2009.

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 204,000 workers and professionals, 9.4% of the overall UK construction workforce
- Estimated construction output for 2010 for Scotland is £9.6billion, 8.4% of the UK total construction output.
- Scotland is ranked 4th out of the 12 nations and regions of the UK in terms of overall construction output figures.
- In 2010, there were nearly 21,000 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 over two-thirds (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 2010, 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 still 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 setting out actions to meeting the greenhouse gas emissions target for a 42% reduction by 2020 through the Energy Efficiency Action Plan. This 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.

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 data²³ providing a full UK picture (2008/09) shows over 145,000 construction qualification achievements from further and higher education, with learners in Scotland making up over 9,000 qualification achievements.

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, in 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	28%	29%	35%	17%	28%	36%
S/NVQ L3	17%	19%	18%	17%	17%	16%
Trade Apprenticeships*	12%	9%	18%*	26%	13%	5%
S/NVQ L2	13%	14%	9%	13%	13%	16%
Below S/NVQ L2	12%	10%	6%	6%	11%	12%
Other qualifications	10%	9%	7%	4%	9%	8%
No qualifications	8%	11%	7%	17%	8%	7%

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:

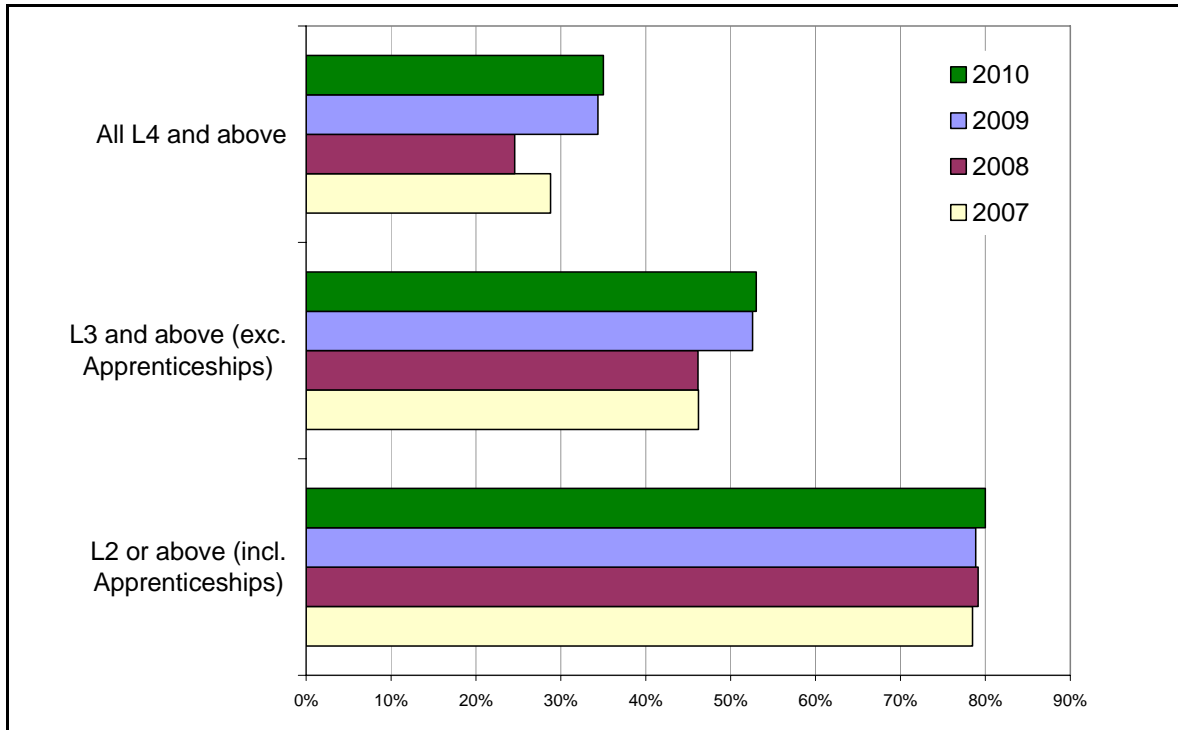
- Generally has a higher skills profile than other areas of the UK
- Is above the UK skill profile at all levels

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 these qualifications are 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 four years, as Chart 11 demonstrates, however 2009 and 2010 are comparable for qualification levels.

Chart 11 - Qualifications of the Construction Workforce, Scotland: 2007-2010



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.

There does appear to be a noticeable shift in the profile of qualifications at level 4 and above 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 whose work falls under SIC (2007) 41, 42, 43.1, 43.3 & 43.9, such as bricklayers, roofers, wood trades, construction managers and the like, against those who work in SIC (2007) 71.1 & 74.9, such as civil engineers, architects, surveyors and technicians.

Table 5 - Construction Industry Workforce Qualifications by SIC2007 Occupations, Scotland v UK 2010

	Scotland 41 – 43.9	Scotland 71.1 & 74.9	UK 41 – 43.9	UK 71.1 & 74.9
S/NVQ Level 4 & above	25%	71%	20%	66%
S/NVQ Level 3	19%	13%	19%	11%
Trade Apprenticeships	22%	7%	14%	4%
S/NVQ Level 2	10%	5%	14%	8%

Source: Office for National Statistics, Labour Force Survey 2010

As would be expected the vast majority of occupations with SIC (2007) 71.1 & 74.9 are educated to L4 and above, while those covered in the classifications around SIC (2007) 41 to 43.9 show a far higher proportion of trade apprenticeships. The positive in Scotland

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

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 industry stakeholders.

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. In recent years SVQ L2 apprenticeships have been introduced to cover some civil engineering and specialist trades and there has also been an increasing number of L3 technical, L4 and L5 apprenticeships. While England, Northern Ireland and Wales are also showing increased numbers of technical and higher level apprenticeships, it is still the case that in these nations a Level 2 is considered the benchmark and progression to Level 3, if available, is optional.

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.

3.2.1 Apprenticeships

There is wide recognition of apprenticeships within the Scottish construction industry with over 60% of employers being aware of Modern Apprenticeships^{24, 25}. 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%²⁶.

However, the recession had a significant impact on the numbers of construction apprentices. With the levels of work across the industry dropping significantly,

²⁴ ConstructionSkills (2009), Skills and Training in the Construction Sector 2009

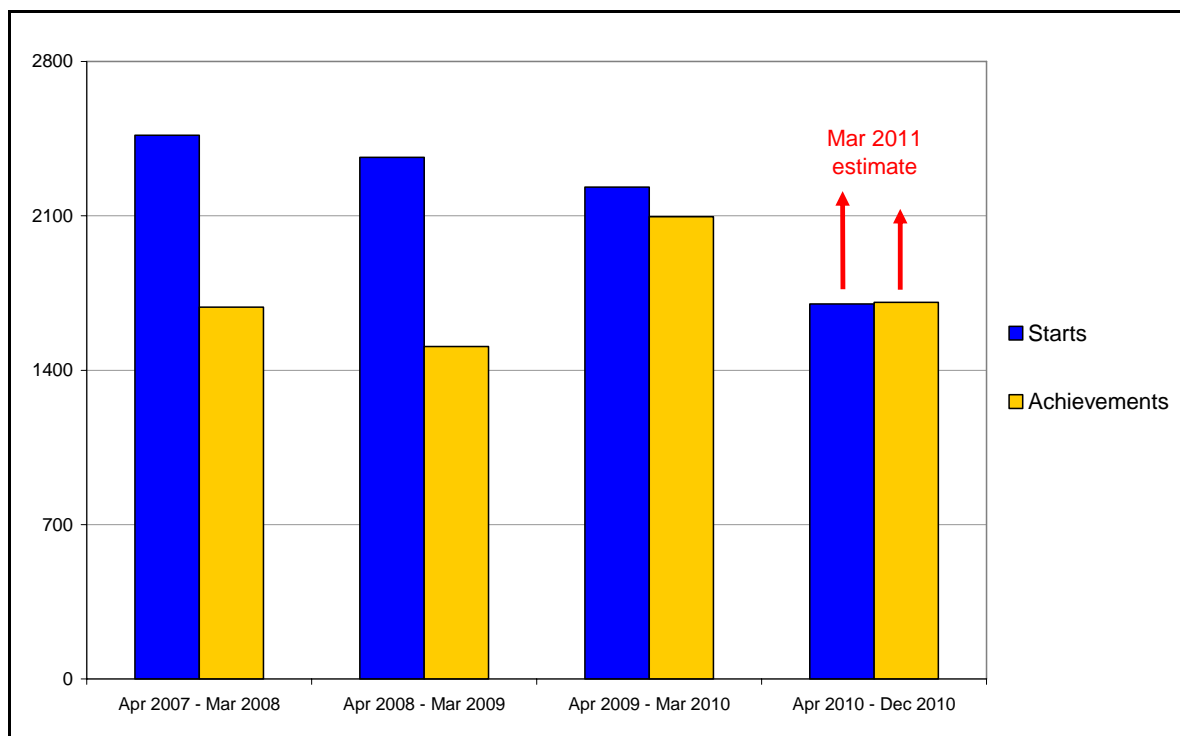
²⁵ Alliance of Sector Skills Councils (2011), LMI profiles – ConstructionSkills report

²⁶ ConstructionSkills (2009), Skills and Training in the Construction Sector 2009

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. However, as effective as such initiatives have been apprentices have still been lost as a result of the recession.

To give a view of the recent trends in the number of apprentices within Scotland, Chart 12 below shows the total number of starts and completions over the last three years with an estimate of numbers for 2010.

Chart 12 – Total Modern Apprenticeship Starts and Completions, Scotland 2007-2010



Source: Skills Development Scotland, ConstructionSkills

As with overall employment data, there is a drop in apprenticeship starts from 2008, although data available from April 2010 indicates the number to be stabilising at around 2,100 starts. The trend for a drop in numbers is not evident in achievement statistics which show an increase in 2009/2010 and the 2010/2011 data indicates a similar level. With the length of time to complete an apprenticeship framework being three or four years for construction, the drop in numbers in 2008 and 2009 will take some time to filter through into achievements, although even then this may be offset by improvements in the achievement rates, which have risen from 52% of all leavers in 2008/2009 to 68% in 2010. For practical reasons also it is speculated that employers who have invested in apprentices are generally more likely to retain them if they are closer to completion as they seek return on that investment. Attempts to limit future training costs would then result in the employer not replacing that apprentice with a new entrant, hence the numbers of starts decreasing whilst completion levels remain relatively buoyant.

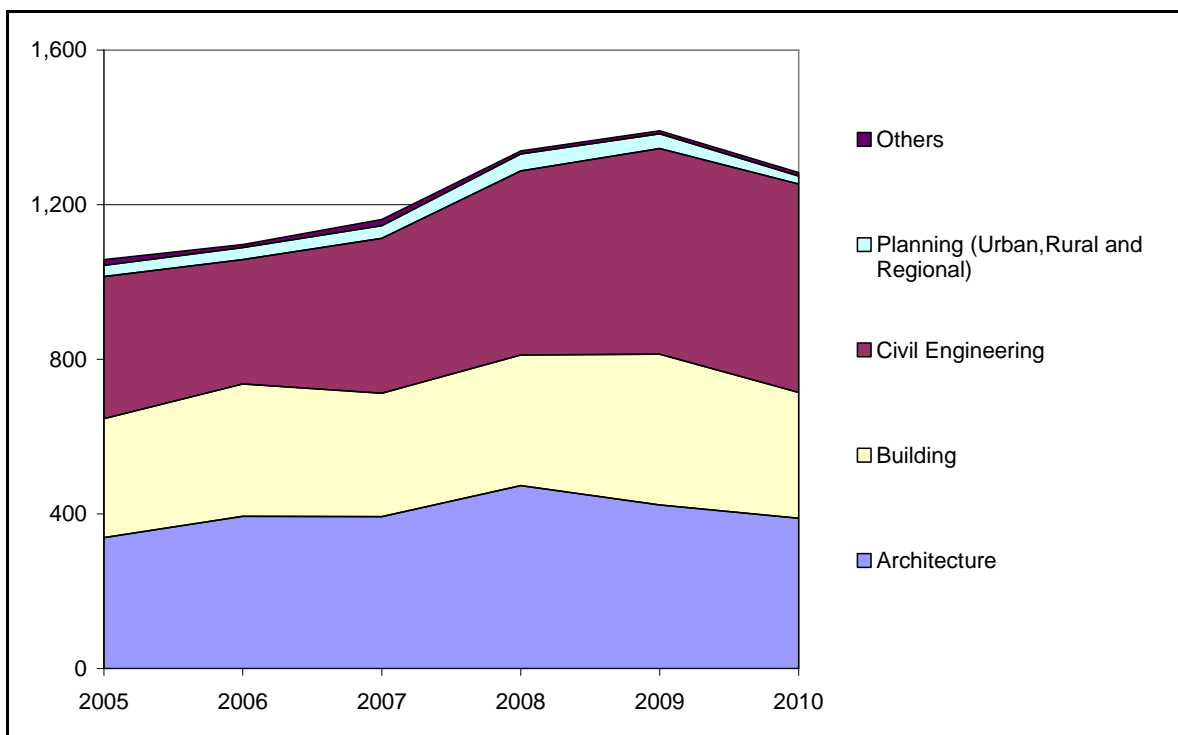
3.2.2 Higher Education

A good indication of the trends in Scottish Higher Education can be taken from looking at applications for construction related degree courses²⁷. The main degree courses offered fall into the categories shown below.

- Architecture
- Building
- Civil Engineering
- Planning.

In terms of the overall number of applicants on these courses, Chart 13 shows how these have risen between 2005 and 2009 for UK students undertaking degree courses with a Scottish University, along with the proportion on each of the main degree course identified.

Chart 13 – UK Domicile Applications on Construction Degree Qualifications for Scottish Universities, 2005-2010



Source: UCAS

Like the overall UK picture there has been a steady increase in applicants from 2005 to 2009, with quite a steep rise recorded in 2008. However the Chart shows the drop in applications received in 2010, with a fall of nearly 8%, despite the fact that the total number of degree applications in Scotland increased by nearly 16%.

Chart 13 indicates the importance of architecture, civil engineering and building degrees as these three account for over 95% of all construction degrees within Scottish Universities, and in 2010 the most significant drop in applicants was for building degree (-16% on 2009), while civil engineering applications showed a marginal increase.

The underlying reasons for this are probably related to the recession and construction not being viewed as a positive career choice, although with degree courses taking three or four years to complete it will be some time before this decline becomes evident in any reduction in the number of new entrants.

²⁷ <http://search1.ucas.co.uk/fandf00/index.html>

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^{28,29,30, 31}. 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 the sort of learning by experience which could take place all the time³², 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 employer³³.

While there are broad similarities between the performance of training for the Scottish construction industry and UK trends the previous SSA Report³⁴ noted some clear differences;

- Construction companies were more likely to train a higher percentage of their workforce, although this appeared to be mainly for companies with between 3 and 9 employees.
- Training was 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 employee's performance in the workplace.
- Construction companies were less likely to use further education to deliver training and more likely to use Higher Education.

While the pattern of training could be related to the distribution of companies within the sector, it was a different pattern to that shown by the Scottish Employers Skill Survey 2008³⁵ which indicated the proportion of employees receiving training move towards larger companies and for slightly longer duration (more 3 – 5 days).

The most recent Scottish Employers Skill Survey³⁶ does not report in quite the same way however it does show that construction employers are less likely to provide training when compared to all industries within Scotland (49% compared to 39% of companies not training). It should also be noted though that more construction companies consider their existing staff to be more fully proficient (54% compared to 46% for all industries within Scotland), which may in part explain the reduction in training being offered.

When looking at the barriers that employers have experienced to training and development over the last 12 months, the two main barriers identified in all research are;

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

²⁸ ConstructionSkills (2009), Skills and Training in the Construction Industry, 2009

²⁹ Scottish Government (2011), Skills in Scotland 2010

³⁰ Alliance of Sector Skills Councils (2009) Construction Scottish Sector Profile 2009

³¹ Scottish Government (2011), Scottish Employers Skills Survey, 2010

³² ConstructionSkills (2009), Skills and Training in the Construction Industry 2009

³³ ConstructionSkills (2008), Skills and Training in the Construction Industry 2009

³⁴ ConstructionSkills (2009), Sector Skills Assessment Report - Scotland

³⁵ Scottish Government (2009), Skills in Scotland 2008

³⁶ Scottish Government (2011), Scottish Employers Skill Survey, 2010

These barriers have been consistently identified in both the previous SSA Report and 2008's SESS, which indicates that further work would be required from all stakeholders if they are to be successfully overcome.

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 start number dropping and existing learners being displaced
- Apprentice completion numbers in 2009 and 2010 are better than previous years.

For higher education the main degree courses are

- Architecture
- Building
- Civil Engineering
- Planning

The rising trend in numbers seen between 2005 and 2009 has ended with a significant drop in applications recorded in 2010 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 employee's 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 appropriately skilled applicants. The second mismatch that occurs is **skill gaps**, where the existing workforce is 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 it is useful to compare previous research carried out by ConstructionSkills³⁷ against the recent findings reported by the Alliance of Sector Skills Councils, Scotland³⁸ from analysis of the Scottish Employers Skill Survey 2010 (SESS 2010).

Previous research had shown 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%.

These results showed that during 2009, the construction industry in Scotland was 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 fared better than England, Northern Ireland and Wales. The results also show very considerable changes compared with data from 2008³⁹, with far fewer employers in 2009 reporting shortages of skilled staff over the previous 12 months.

These findings were consistent with findings from ConstructionSkills' Employer Panel research, which confirmed that recruiting skilled staff was not a constraint on activity⁴⁰, and consistent with all the main state of trade surveys⁴¹ from organisations across the construction industry, who have all reported a considerable decrease in skill shortages to a record low.

The more recent SESS (2010) continues to note that skills shortages, as a percentage of employment is at a very low level for Scotland.

4.2 Hard-to-Fill Vacancies

Where there are vacancies, some of these can be considered as hard-to-fill when employers face particular challenges in trying to recruit. It should be noted that when looking at the data on hard-to-fill vacancies, the response rate does suffer from low sample sizes across all research surveys, especially when vacancies are at low levels as well. Caution needs to be exercised when looking at the findings, however there is an

³⁷ ConstructionSkills (2009). Skills and Training in the Construction Industry, 2009

³⁸ Alliance of Sector Skills Councils (2011), LMI profiles - ConstructionSkills

³⁹ ConstructionSkills (2008). Skills and Training in the Construction Industry, 2008

⁴⁰ ConstructionSkills (2009), Employer Panel, Wave 9

⁴¹ Federation of Master Builders, State of Trade Survey, Q2, 2009; RICS Construction Market Survey, Q3, 2009; Construction Products Association, Construction Trade Survey, August 2009

indication that construction in Scotland has more of an issue with hard-to-fill vacancies compared to other industries in Scotland and also compared to construction across GB.

In 2009, when trying to recruit staff 39% of Scottish construction employers reported these vacancies as being hard-to-fill, compared to the GB figure of 22%⁴², while in the SESS 2010, nearly 60% of construction vacancies were considered hard-to-fill, compared to around 35% for all industries in Scotland. The main reason for these hard-to-fill vacancies is the applicants lacking the motivation and attitude that employers are looking for, although a lack of work experience and lack of skills were also cited.

The issue of attitude and motivation causing hard-to-fill vacancies links through to earlier Skills in Scotland⁴³ findings and previous ConstructionSkills research. This illustrates that in addition to equipping applicants with occupational skills and work experience, it is important for applicants to have 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?

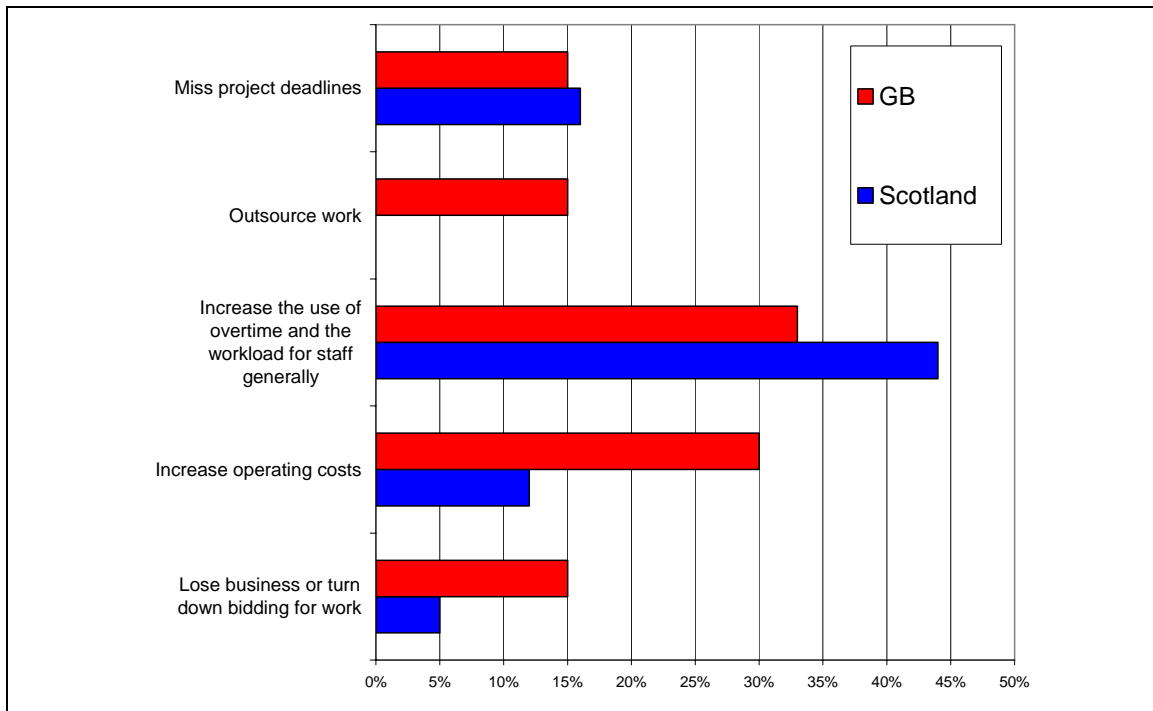
As for the impact of skills gaps on employers and how employers look to overcome them the details for Scotland are shown on Charts 14 and 15, compared to the overall GB figures.

⁴² ConstructionSkills (2009), Skills and Training in the Construction Industry, 2009

⁴³ Scottish Government (2009), Skills in Scotland, 2008

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, and it also is notable that outsourcing of work is negligible.

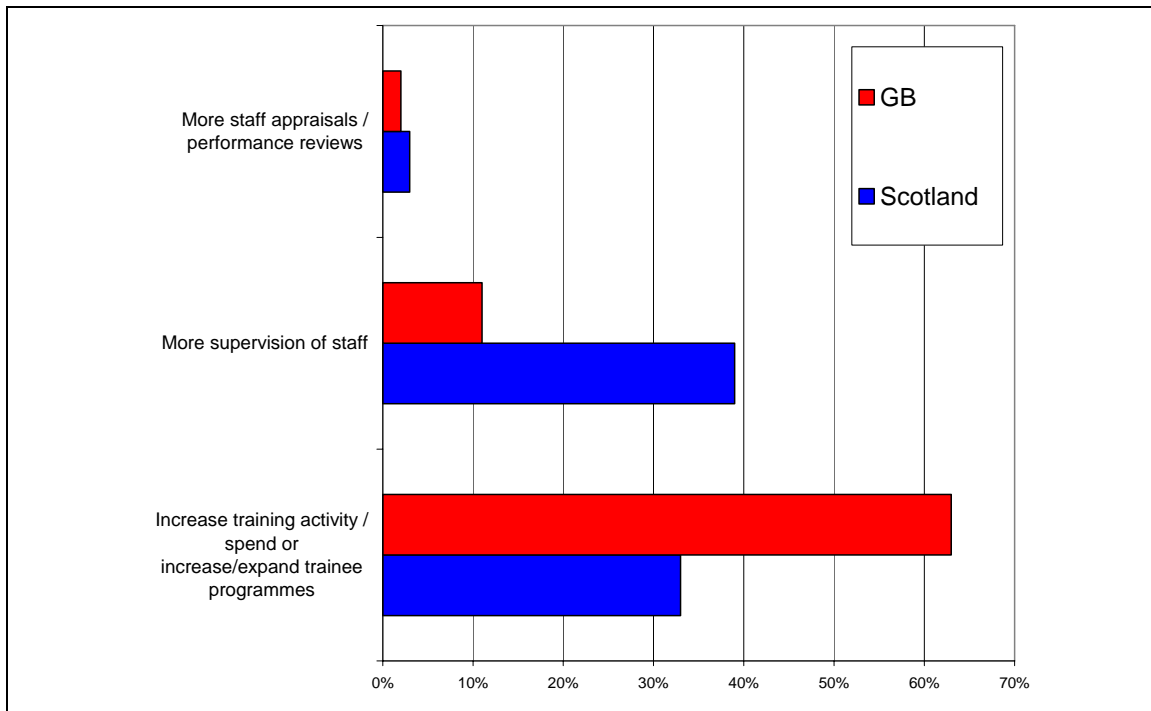
Chart 14 - The Impact of Skills Gaps, Scotland v Great Britain



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 15 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 15 – 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 SESS 2010 with the only notable exception being the provision of further training to overcome a skills gap. Here SESS 2010 showed that over half of construction employers in Scotland increased or expanded training programmes⁴⁴ to overcome skills gaps.

4.4 Training

With regard to the training delivered to staff, research^{45,46, 47} 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 and 2010 note, 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; manufacturing; and real estate, renting & business activities in Scotland offer less, or similar levels of training, while in sectors such as public administration and defence, education, and health and social work the levels offering training have been consistently above 80% 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.

⁴⁴ Alliance of Sector Skills Councils, Scotland (2011), LMI profiles – ConstructionSkills report

⁴⁵ ConstructionSkills (2009), Skills and Training in the Construction Industry

⁴⁶ Scottish Government (2009), Skills in Scotland 2008

⁴⁷ Scottish Government (2011), Skills in Scotland 2010

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 6.3%, the highest level over the last 15 years. As unemployment is considerably higher in the construction contracting sector (9.6%) than for professionals (4.0%), it can be assumed that redundancies are affecting the whole construction industry.

Table 6 below shows the current unemployment rate for the construction industry and compares these findings to the overall UK rate.

Table 6 - The Unemployment Rate in the Construction Industry and All Industries, by Nation (UK: 2009).

	Construction Industry	All Industries
England	8.0%	6.3%
Wales	14.5%	7.2%
Scotland	10.9%	6.4%
Northern Ireland	15.1%	5.4%
UK	8.8%	6.3%

Source: Office for National Statistics, Labour Force Survey

As the data highlights the construction industry is still being significantly affected by the economic downturn, with the unemployment rate not only higher nationally, compared to the figure for all industries (8.8% v 6.3%), but also higher within each country and higher when compared to last year's SSA Report. For Scotland the construction industry figure of 10.9% is above the UK figure and a noticeable increase from the previous year (9.1%). This shows that despite the slight recovery in output, construction employment 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**, where 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.

The overall position on skills shortages and skills gaps is very similar to that reported in the 2009 Sector Skills Assessment Report for Scotland

Skills shortages noted for the Scottish construction industry were that;

- As a percentage of employment, skills shortages are still at a very low level for Scotland.
- Scotland has more of an issue with hard-to-fill vacancies compared to other industries in Scotland and also compared to construction across GB.
- The main reason for these hard-to-fill vacancies is the applicants lacking the motivation and attitude that employers are looking for.

For skills gaps, the more recent Scottish Employers Skills Survey 2010 support the previous view in that;

- Around one in ten employers (10%) have staff lacking proficiency, this figure is broadly consistent across England, Northern Ireland, Scotland and Wales.
- 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 increased training activity or increased/expanded the training programme.

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, 8.8%
- Scottish construction industry unemployment rate, 10.9%
- Scotland all industry unemployment rate, 6.4%

5. What New and/or Changing Factors will Influence Skill/Employment Demand in the Future?

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 and last year's SSA Report identified three main areas of relevance, which were;

- Devolved power
- Climate change
- Skills policy

These main areas are still relevant and this section reviews them to take account of changes that have occurred during 2010, and sets them against what ConstructionSkills views as being the main challenges that will influence future employment and skills demand.

Before this there is one aspect that is very clear, at the moment the primary driver influencing employment and skills demand is still the impact of the recession and short term survival, with profitability and market share taking precedence over other drivers such as legislation and policy⁴⁸. However in the medium to longer term the drivers set out below will increasingly become important and for each of these the extent that devolved powers are used by the Scottish Government plays a strong part in differences between agendas in Scotland as opposed to the wider UK view.

5.1 Increased Productivity

Long term growth for the sector during a period when public spending is tight will require the industry to improve productivity so that it can stay profitable at a time when inflation is rising and margins are being squeezed. This will require a focus on maintaining existing skills and developing new ones, as well as innovation in working practices, to prepare the sector for growth. The issue of productivity was outlined earlier and improving this for Scotland will be a key objective of the future skills policy⁴⁹ that links into overall skills development.

In employment terms increasing productivity may not lead to employment gains that have been seen in previous years, although as the sector recovers from the recession employment opportunities will be presented.

5.2 Low Carbon Revolution in Construction and the Built Environment

Ensuring all firms, particularly the small to medium firms that make up over 90% of establishments within the Construction and Built Environment sector, are prepared to take on the energy efficiency challenge. In a sector that accounts for 47% of all UK carbon emissions, the move to cut CO₂ presents a logistical challenge but also a great opportunity for growth.

Although still bound by UK Government legislation, the Scottish Parliament has arguably the most devolved power when compared to the other nations. One of the areas where this has been used is the progression to a low carbon, more energy efficient built environment, which is evidenced by the examples of some of the main policies and legislation for Scotland.

- Energy Efficiency Action Plan
- Renewables Action Plan
- Renewable Heat Action Plan
- Climate Change (Scotland) Act

⁴⁸ ConstructionSkills (2010), Understanding Future Change in Construction, Summary report for Scotland

⁴⁹ Scottish Government (2007), Skills for Scotland

- The Scottish Sustainable Procurement Action Plan
- Scotland's Zero Waste Plan
- Low Carbon Economic Strategy for Scotland

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 in meeting the more stretching greenhouse gas emissions targets set in the Climate Change (Scotland) Act.

The response to this will require action across the whole of the built environment as it will involve a significant improvement in the energy efficiency of both new and existing housing, as well as offices, schools, hospitals and retail premises across the private and public sectors.

Although schemes such as Carbon Emissions Reduction Target (CERT) and Scottish Housing Quality Standards (SHQS) have been operating for a number of years, there is still a significant amount of work to do to improve energy efficiency and microgeneration across the built environment. Initiatives such as Feed-in Tariffs, Renewable Heat Incentive, Green Deal and the Energy Company Obligation will stimulate demand in the coming years whilst Scottish Building Standards and Scottish Government policies will provide the legislative backdrop for future work.

The scale of the task and the opportunity presented by work to improve energy efficiency across the built environment is significant, and this will inevitably require a suitably skilled and experienced workforce to achieve it. Although there is some uncertainty around the pace of uptake for future energy efficiency measures, it is clear that certain occupations will be influenced more than others and the requirement for new skills will need to focus on the existing workforce.

5.3 The Recruitment Challenge

All industries face the challenge of ensuring a pipeline of talented new entrants coming into them and for construction in Scotland this is particularly relevant to Apprenticeships. Apprenticeships are widely recognised across the Scottish construction sector⁵⁰ and the challenge will be to champion this route as the best vocational route available, keeping this option front of mind for employers, students and the public sector, by looking for innovative, employer-led approaches to stimulate opportunities.

Along with Apprenticeships, graduate new entrants are an important aspect for the sector, especially for the professional occupations. In 2010 over 30% of new entrants into the construction industry in Scotland had a degree level qualification or above⁵¹, therefore this is also an important factor for new entrants.

For Scotland the main challenge will be understanding the diverse skill requirements required, then competing against the key growth sectors for the pool of available new entrants. Being successful in this will enable the construction and built environment sector to stimulate innovation and growth in communities across the country.

5.4 Development of Education and Training Provision

Funding and training provision for new entrants must remain but not be to the detriment of developing the industry's biggest asset, the existing workforce. Maintaining the competitiveness of the construction sector will need to investment in 'up-skilling' and funding of training provision for adult skills.

⁵⁰ Scottish Government (2011), Scottish Employers Skills Survey 2010

⁵¹ Alliance of Sector Skills Councils, Scotland (2011), LMI profile – ConstructionSkills report

For Scotland importance of having an education and training system that enable economic growth is shown by the recently published Skills for Scotland: Accelerating the Recovery and Increasing Sustainable Economic Growth and the Review of Post 16 Education and Vocational Training Provision in Scotland, which is due to report to Scottish Parliament in 2011. The overall aim is 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.

Both of these link back to improving productivity and making sure that skills are utilised in the workplace, which will be key elements for government and employers. At the moment evidence shows that there is a mismatch with Scotland performing well with regard to skills and education but less well in relation to economic performance, which highlights the importance of making sure that skills are utilised in the workplace to boost productivity and growth^{52, 53},

Although construction is not one of the key sectors listed in the Scottish Government's 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 the extent to which the Scottish Government can wield devolved powers to shape 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?

⁵² Scottish Government (2007), The Government Economic Strategy

⁵³ Scottish Government Social Research (2008), Skills Utilisation Literature Review

Summary Box

The main challenges that will influence employment and skills demand for the construction sector in the future.

1 Increased Productivity

Long term growth for the sector during a period when public spending is tight will require the industry to improve productivity so that it can stay profitable at a time when inflation is rising and margins are being squeezed. This will require a focus on maintaining existing skills and developing new ones, as well as innovation in working practices, to prepare the sector for growth. The issue of productivity was outlined earlier and improving this for Scotland will be a key objective of the future skills policy that links into overall skills development.

In employment terms increasing productivity may not lead to employment gains that have been seen in previous years, however as the sector recovers from the recession employment opportunities will be presented.

2 Low Carbon Revolution in Construction and the Built Environment

Ensuring all firms, particularly the small to medium firms that make up over 90% of establishments within the Construction and Built Environment sector, are prepared to take on the energy efficiency challenge. In a sector that accounts for 47% of all UK carbon emissions, the move to cut CO₂ presents a logistical challenge but also a great opportunity for growth.

In Scotland, the scale of the task and the opportunity presented by work to improve energy efficiency across the built environment is significant, and this will require a suitably skilled and experienced workforce to achieve it. Although there is some uncertainty around the pace of uptake for future energy efficiency measures, it is clear that certain occupations will be influenced more than others and the requirement for new skills will need to focus on the existing workforce.

3 The Recruitment Challenge

All industries face the challenge of ensuring a pipeline of talented new entrants coming into them and for construction in Scotland this is particularly relevant to Apprenticeships. Apprenticeships are widely recognised across the Scottish construction sector. Along with Apprenticeships, graduate new entrants are an important aspect for the sector with over 30% of new entrants into the construction industry in Scotland during 2010 having a degree level qualification or above.

For Scotland the main challenge will be understanding the diverse skill requirements required, then competing against the key growth sectors for the pool of available new entrants.

4 Development of Education and Training Provision

Funding and training provision for new entrants must remain but not be to the detriment of developing the industry's biggest asset, the existing workforce. Maintaining the competitiveness of the construction sector will need to investment in 'up-skilling' and funding of training provision for adult skills.

For Scotland this links back to the work that is being done around the skills with the aim of having 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 2011-2015, the Construction Skills Network produces an annual report⁵⁴ 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 2015. It will then draw on other material such as Futureskills Scotland Labour Market Projections 2007 to 2017 and 2020 Vision⁵⁵ 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 2011 to 2015

Our core scenario for the Scottish industry assumes that from 2011 to 2015:

- Public sector spending cuts will impact in 2011 and the forecast is for a slow recovery in UK GDP growth to around 2.0% p.a. by 2015.
- 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 decline slightly in 2011 then start to recover from around 2012, although it will be at a lower level than GDP growth.
- For Scotland, construction output is forecast to grow strongly in 2010, however it will decline in 2011 and 2012 before recovering from 2013. This profile is different to the UK average, however average growth over the period 2011-2015 will be 1.0% for Scotland, which is on par with the UK average.
- In Scotland, new work will continue to be the main driver of construction output with private housing, infrastructure and commercial being the main 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 2010, Scotland deferred public sector cuts, therefore there will be additional pressure on public finances from 2011.
- Commercial and industrial new work, both very badly affected in 2009 start to recover, however, output levels in 2015 will still be similar to those seen in 2008 and there is no real growth.

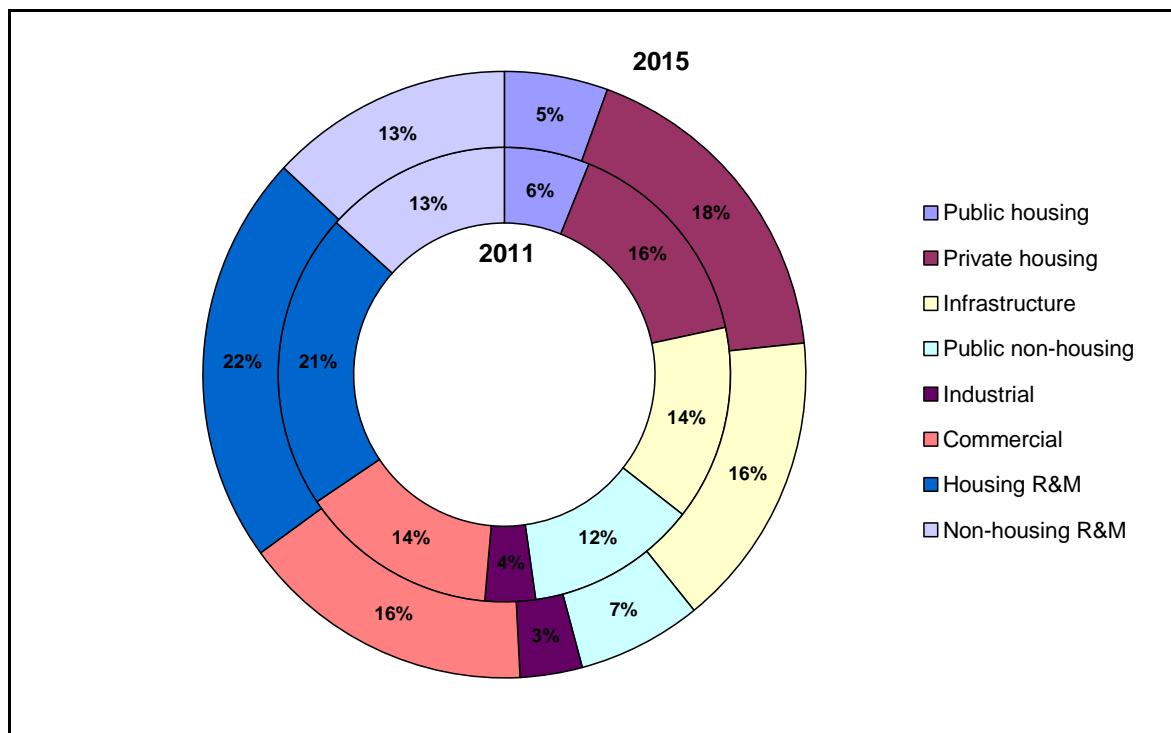
⁵⁴ ConstructionSkills (2011), Construction Skills Network, 2011-2015 LMI Report

⁵⁵ ConstructionSkills (2008), 2020 Vision – The Future of UK Construction

- Infrastructure work continues to be an important sector with the Forth Replacement Crossing starting 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 2015 will be broadly similar to that of 2011, see Chart 16 below.

Chart 16 - Construction Industry Sector Structure, Scotland 2011-2015



Source: Construction Skills Network; Experian

In terms of total construction output, between 2011 and 2015, output in Scotland is forecast to rise from nearly £9.4billion in 2011 to over £10.1billion by 2015 (constant 2005 prices). This means that when looking at the industry sector structure for Scotland chart, each 1% equates to around £90-100million worth of construction output in current prices.

The core scenario recognises that although the construction industry is facing challenging times over the short-term, Scotland looks set to perform better almost identically to the UK for both construction output growth and employment growth over the next five years, ref. Table 7 below.

Table 7 – Average Output Growth and Employment Growth Rates for Construction, UK v Scotland, 2011-2015

From 2011–2015	UK	Scotland
Annual average construction output growth	1.0%	1.0%
Employment growth	4.6%	4.5%

Source: Construction Skills Network, 2011

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 Scotland⁵⁶ 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
- Employment is expected to shift towards public and private sector industries
- There will be more openings for jobs with higher qualifications

As pointed out earlier, forecasting is not an exact science and the UK report sets out some risks to the core scenario. There are two main risks to the economic forecasts, which are;

- **Public sector cuts being deeper than expected:** as mentioned, the Scottish Government took the option to defer some of the spending cuts therefore the risk here is that when they do come, they will be deeper than anticipated. The risk here is that any recovery in the short to medium term may be lost as workloads and confidence levels suffer. Although public sector cuts would impact directly on the publicly financed sectors, there would be effects across all sectors from housing through to R&M with reducing consumer confidence.
- **Private sector investment fails to return:** the main underlying premise behind most forecasts for future growth is that as the public sector is cut, the private sector grows. In previous recessions this has been the case, however economic conditions at the moment are best described as being fragile and the key risk to our forecast lies around uncertainty about the strength of growth that will be seen in the short to medium terms.

In the short term, these two risks may combine to cause a further a drop in output, a fact that was picked up by feedback from our CSN Observatory meetings⁵⁷, Employer Panel⁵⁸ and by the research into Understanding Future Change in Construction⁵⁹.

This does illustrate the level of uncertainty that exists at the moment, however this is really short term uncertainty with the medium to longer term prospects for the industry for growth in Scotland, albeit at lower levels than that seen in the years before the recession.

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

Industry employment linked to the core scenario is shown on Chart 17 and consistent with the output projections, a drop in employment is forecast for 2011 and 2012 before rising from 2013. By 2015 employment will be back to near pre-recession levels with over 250,000 expected to be employed in the construction sector. Note: Construction Skills Network figures do include employment for plumbing and HVAC, and electrical trades which are not part of ConstructionSkills' footprint.

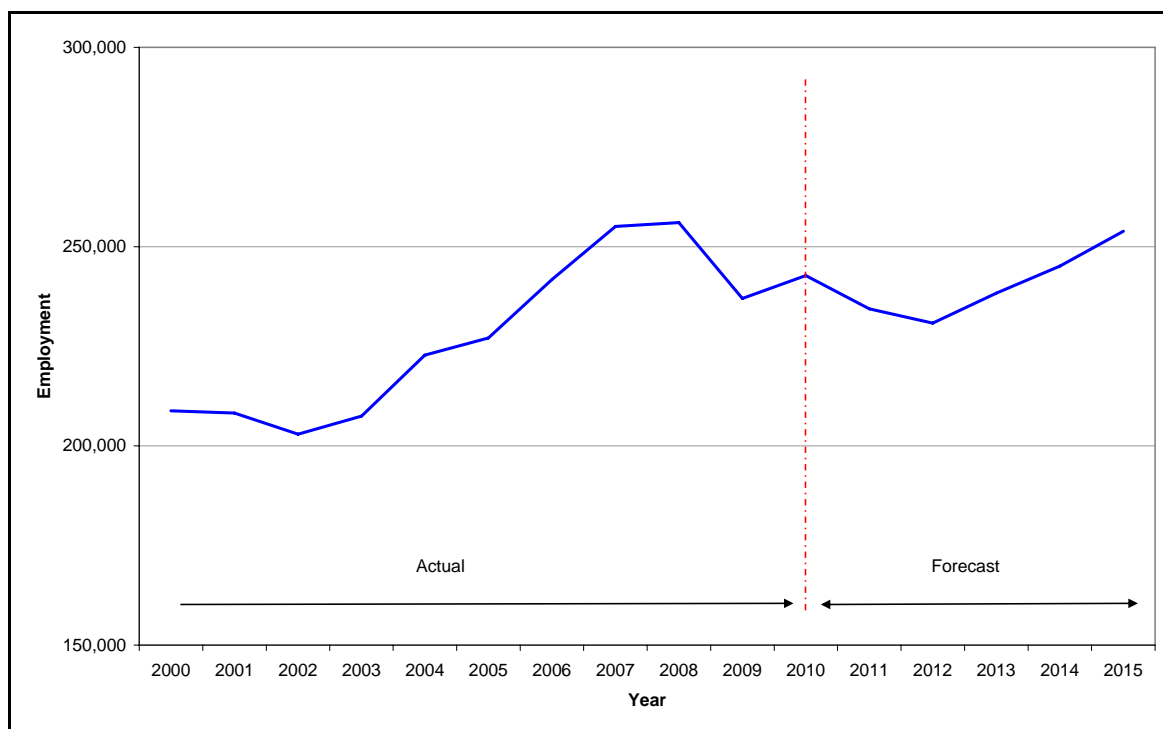
⁵⁶ Futureskills Scotland, Labour Market Projections 2007 to 2017

⁵⁷ ConstructionSkills (2010), Construction Skills Network

⁵⁸ ConstructionSkills (2010), Employer Attitudes and Motivations to Learning and Training (Wave 10)

⁵⁹ ConstructionSkills (2010), Understanding Future Change in Construction

Chart 17 - Construction Industry Employment for Scotland, 2000 to 2015



Source: Construction Skills Network; Experian

Compared to the overall UK employment forecast, Scotland will experience more of a decline in 2011 and 2012, before stronger growth from 2013.

The growth in employment will be driven by the new work sectors of housing, infrastructure and commercial work. 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 there are tentative signs of a recovery. Meeting greenhouse gas emissions reductions targets will mean implementation of more stringent low carbon building standards for all new housing developments.

With infrastructure the key drivers here will be work around transport and 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, and the construction of the Forth Replacement Crossing will be a major programme over the coming years.

Commercial construction output growth is expected to strengthen from 2013 as continued economic recovery strengthens demand for new office, retail and leisure facilities. By then, oversupply in the two major office markets in Scotland, Glasgow and Edinburgh should have eased, and there is the potential for the Commonwealth Games in 2014 to act as a catalyst for regeneration. The biggest ongoing commercial development in Scotland remains the £1bn Menie Estate project, which is due to deliver two golf courses, a golfing academy a five-star hotel and a mixed residential development.

Although not as obvious as the growth in new work, the growth forecast over the medium term in the R&M sectors is another key driver as R&M work is more than twice as labour intensive. Scotland pushing ahead with its carbon emission reduction programme, which should benefit the retrofitting market in particular, will be a key driver of output and employment in this sector. Programmes set out in the Energy Efficiency Action Plan for Scotland include the Energy Assistance package and the Home Insulation Scheme, as

well as UK-wide ones such as the Carbon Emissions Reduction Target (CERT) and the Community Energy Saving Programme (CESP). When the Green Deal and Energy Company Obligation come into effect from 2012 this should provide further impetus for work in this area.

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.

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^{60, 61, 62}.
- With the current recession, leadership and managerial skills are increasingly being viewed as important⁶³.

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 and/or employers.

Table 8 below shows the current relative skill profiles for construction in the UK against Scotland.

Table 8 - Proportion of Workers in Industry by Highest Qualification Level

	UK Construction	Scotland, Construction
% qualified to at least L2 (incl. Trade Apprenticeships)	71%	80%
% qualified to at least L3	45%	53%
% qualified to at least L4	28%	35%

Source: Labour Force Survey (LFS), 2010

Notes: LFS data records Trade Apprenticeships and for Scotland these would mainly be at L3.

These figures show that the qualification profile for construction workers in Scotland is above that of UK construction at all levels, however previous comparisons against all industry figures in Scotland show that construction has a lower % of L4+ qualifications⁶⁴.

Table 9 shows the average Annual Recruitment Requirement (ARR) figures produced by the Construction Skills Network⁶⁵ also gives an indication of the likely skills demand over the next five years, after taking into account the normal churn that happens.

⁶⁰ Labour Market Projections 2007 to 2017, Futureskills Scotland, 2007

⁶¹ The Government Economic Strategy, The Scottish Government, 2007

⁶² Skills for Scotland, The Scottish Government, 2007

⁶³ Emerging Stronger, CBI, 2009

⁶⁴ ConstructionSkills (2010) Sector Skills Assessment Report for Scotland, 2009

⁶⁵ ConstructionSkills (2011), Construction Skills Network Report - Scotland

Table 9 – Annual Recruitment Requirement by Occupation for Scotland, 2011 - 2015

Occupational Group	2011-2015 (FTE's per year)
Senior, executive, and business process managers	-
Construction managers	190
Non-construction professional, technical, IT, and other office-based staff	-
Wood trades and interior fit-out	520
Bricklayers	-
Building envelope specialists	50
Painters and decorators	290
Plasterers and dry liners	160
Roofers	-
Floorers	<50
Glaziers	<50
Specialist building operatives nec*	160
Scaffolders	160
Plant operatives	560
Plant mechanics/fitters	510
Steel erectors/structural	140
Labourers nec*	-
Electrical trades and installation	-
Plumbing and HVAC Trades	50
Logistics	200
Civil engineering operatives nec*	-
Non-construction operatives	-
Civil engineers	110
Other construction professionals and technical staff	210
Architects	<50
Surveyors	<50
Total	3,360

Source: ConstructionSkills (2011)

With the growth in infrastructure related output, it is not a surprise to see that plant operators and plant mechanics have two of the highest projected recruitment requirements. As wood trades are the dominant employment group it is also no surprise to see that feature strongly as well.

The expected recovery in the housing sector along with R&M should provide employment opportunities for the likes of painters and decorators; and plasterers and dry liners. However the overall picture is for the total recruitment requirement to represent around 1.4% of total employment each year, which is quite a low figure and slightly lower than the comparable UK figure of 1.7%.

As mentioned before, delivering a low carbon, energy efficient built environment while improving productivity will be two key drivers of demand for higher skills across the Scottish construction industry.

6.4.1 Low Carbon, Energy Efficiency Skills

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 the use of better materials to 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 in terms of insulation and microgeneration. For Scotland and for the UK, houses that are currently built will be the main part of the housing stock with the main skills demand issues being focused around understanding the most effective way to improve energy performance. This is likely to involve some form of insulation treatment, possibly in conjunction with microgeneration technology being installed, however this does not always mean a significant change in the current skill levels.

It is the attention to detail that is required when working with new technology and being familiar with the subtle adaptations that are required, that appear to be the main skills issues at the moment. For example ensuring air tightness 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 will 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 will be a 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 will result in:

- 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.
- A 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.
- Site workers needing a greater understanding of general building issues such as tolerances, air/water-tightness, and the interaction between components.
- Revised safety training for an environment with heavy lifting, greater heights, and more mechanised equipment.
- 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
- Require some subtle changes in existing skills to meet the future demands of the industry
- 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 outline what we saw as being the core scenario facing construction in Scotland through to 2015 based on assumptions around % GVA growth, % Construction growth, industry structure and construction industry characteristics for Scotland.

Our core scenario assumed that;

- 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 decline slightly in 2011 then start to recover from around 2012, although it will be at a lower level than GDP growth.
- For Scotland, construction output is forecast to grow strongly in 2010, however it will decline in 2011 and 2012 before recovering from 2013.
- In Scotland, new work will continue to be the main driver of construction output with private housing, infrastructure and commercial being the main sectors.
- In 2010, Scotland deferred public sector cuts will be additional pressure on public finances from 2011.
- Commercial and industrial new work, both very badly affected in 2009 start to recover, however, output levels in 2015 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 starting and a number of proposed energy infrastructure schemes, such as the new power line through the Highlands and onshore and offshore wind farm projects.

For industry employment levels Scotland is forecast to show declining employment in 2011 and 2012 before growing from 2013. Overall employment growth from 2011-2015 is forecast to be on par with the UK average.

Scotland looks set to return to 2007 employment levels sometime around 2015, slightly 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
- Require some subtle changes in existing skills to meet the future demands of the industry
- 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

Previous sections have noted significant changes that have occurred over the last 12 months, whereas this section focuses on the future supply of employment and skills. In some respects there will be little change from the previous SSA Report as demographic patterns show little change, however in publishing it's refreshed skills strategy, Skills for Scotland: Accelerating the Recovery and Increasing Sustainable Economic Growth, the Scottish Government has set out how it sees the future of the skills system within Scotland operating and this will have significant implications for future supply of skills.

The Scottish Credit and Qualifications Framework has also been introduced and established to provide opportunity for a more flexible, credit based approach to training. This should facilitate identification of progression routes and making credit transfer opportunities easier, which in turn should give a more flexible and responsive based approach to qualifications that recognises employer based training.

As mentioned earlier, this section will consider other aspects such as demographics and changes to further and higher education that may also influence future supply, although again 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 therefore 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 Scotland⁶⁶ points to a number of key issues around Scotland's future population;

- Overall population will grow slightly from 5.17m in 2008 to 5.36m by 2033.
- Scotland's population growth will be the lowest in the UK, noticeably lower than that projected for England, Northern Ireland or Wales
- The number of people under 16 years will increase slightly from 0.91m in 2008 to 0.92m in 2018, before declining to 0.90m by 2033

⁶⁶ General Register Office for Scotland (2009) Projected Population of Scotland, 2008-based

- The number of working age people will increase from 3.24m in 2008 to 3.36m by 2018, before declining to 3.31m by 2033
- The number of pensionable age people will increase from 1.02m in 2008 to 1.07m by 2018, then increase significantly to 1.34m by 2033

For Scotland this points to a reduction in the number of working age people available to enter all industries from 2018 and a reduction in the number of new entrants available from school. For Scotland's construction industry, the ageing profile combined with less young people poses 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 from 2013 through to 2015 then 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 mentioned 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.

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 migration, most recently from the EU 'Accession 8 States', or the A8⁶⁷, 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.

Migration is perhaps the most difficult component of population change to measure as 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.

Although 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 nationals⁶⁸. 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, which is more people leave Scotland to live elsewhere than move to live in Scotland.

⁶⁷ The Accession 8 States are; Poland, Lithuania, Slovakia, Latvia, Czech Republic, Hungary, Estonia and Slovenia.

⁶⁸ ConstructionSkills and Central Office of Information (2007), Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland

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 1991⁶⁹. The long term view is for net in-migration in future years, although at a lower level than seen in recent years.

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.

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 re-iterating that the 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.
- Scottish students at Scottish universities do not have to pay tuition fees.

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

⁶⁹ General Register Office for Scotland, Scotland's Population 2008: The Registrar General's Annual Review of Demographic Trends: 154th Edition, National Statistics

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.

Skills for Scotland; Accelerating the Economic Recovery and Increasing Sustainable Economic Growth builds on the previous Skills for Scotland strategy and is structured around four key themes;

- **Empowering people** to ensure they have access to advice, support and guidance to acquire skills.
- **Supporting employers** by understanding the skills that they need and ensuring that the supply of skills and training responds to this.
- **Simplifying the skills system** to make it easier for learners and employers
- **Strengthening partnerships** between public, private and third sectors to achieve social and economic ambitions.

The essence of the strategy is to create highly skilled, highly productive workplaces that will drive future growth and economic prosperity.

The ambitions set out to enable this to be achieved will have wide ranging implications on the way that skills are delivered within Scotland, although the short term focus will inevitably be on the Review of Post 16 Education and Vocational Training Provision in Scotland which is due to report back to Scottish Government. At the time of writing the outcome of this review is not clear, however, depending upon the recommendations and actions that arise, it could have a strong influence on skills delivery.

What is clear though, both from the recent Skills in Scotland⁷⁰ and Skills for Scotland⁷¹ 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. This means that the skills system also needs to be easier for employers and learners to understand and access.

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.

⁷⁰ Scottish Government (2011), Skills in Scotland 2010

⁷¹ Scottish Government (2009), Skills for Scotland: Accelerating the Recovery and Increasing Sustainable Economic Growth

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 2007 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 very 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 is one of the elements that the ConstructionSkills’ research programme is examining, along with future employment and skills. However 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 grow slightly through to 2033,
- 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 poses 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 is still dealing with recessionary pressures and coming to terms with the effects of the downturn and a very different set of trading conditions compared to that even three years ago. This means that industry is very focussed on how it can adapt to the changes without undermining potential for recovery and future growth.

The same applies to Scotland and the report highlights the current challenge posed by decreases in sector output, rising industry unemployment, a drop in apprenticeship starts and falling construction related university applications. In the medium to long-term, output is forecast to recover and prospects for employment improve 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 different apprenticeships approach between Scotland and the UK, along with the Scottish Credit and Qualifications Framework (SCQF) are examples of the very real differences that are evident, while Skills for Scotland 2010 and the Review of Post 16 Education and Vocational Training Provision in Scotland will have a strong influence on future training and development.

Although the skills base for construction in Scotland is notably higher than the rest of the UK, there is the issue about how Scotland translates this higher skills profile into productivity growth for the industry. This issue was noted on the previous SSA Report and still remains an area of focus for the Scottish Government.

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 and following up with the Energy Efficiency Action Plan, 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 is a real 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. In addition to energy infrastructure developments, there will be significant programmes of work to improve energy efficiency of new buildings and the energy performance of existing buildings which will play a major part in meeting future emissions reductions targets.

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 of these sectors.

The third, and by no means the least important challenge, which is unique to Scotland is question about the range of devolved powers future Scottish Governments hold and the degree to which it is used. The Scottish Government has arguably exercised a wider range of powers, resulting in a more "Scottish" approach, although with a new coalition government in place at Westminster and Scottish Parliament elections taking place this year, it is too early to judge how this will continue.

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 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.

These changes point toward a future construction workforce that;

- Would be qualified to a higher level than at present,
- Would need a wider range of skills to handle a wider range of work,
- Require 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.

8.2 Key Messages

ConstructionSkills is looking to address these challenges and key priorities for Scotland through the National Action Plan which looks to;

- Preserve the skills base by developing the Construction Qualification Strategy; ensuring Apprenticeship Frameworks meet industry needs; support the development of the Next Generation of National Qualifications; supporting training groups and employers investing in training. With a forecasted dip in employment for 2011 and 2012, maintaining a skilled workforce for the immediate future is going to be of paramount importance.
- Keep the pipeline of talent flowing through targeted recruitment, supported by skills development and career progression such as Getting In, Getting On in Construction and Skills Development Scotland's World of Work. Here the provision of information, advice and guidance, combined with promotion of the sector and improving diversity will be key areas.
- Invest in the future by improving management and leadership skills. ConstructionSkills will work with industry federations to improve access to ConstructionSkills' Management and Supervisory Development Fund to deliver training within Scotland, while also working with stakeholders to ensure that higher national and degree level qualifications meet the needs of the sector. For Scotland, having a higher level of skills that delivers improving productivity and skills utilisation is a key to overall economic growth, and although Scotland's construction skill base is better than other areas of the UK, there is still work to raise this to the general levels for Scottish industries.
- Encourage clients to invest in skills will be a key challenge, however 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. ConstructionSkills will support this through a wide ranging series of actions such as helping construction employers to access the Low Carbon Skills Fund, supporting flexible learning opportunities, promoting industry talent through skills competitions and providing ongoing direct support to construction employers

Effectively tackling these key priorities will enable the construction sector to develop the workforce that will be required in the future and it is critical that businesses, across the construction and built environment supply chain, are supported in relation to people development. It is also important to recognise that these changes will not happen overnight due to timeframes involved for training and also the time that is required to gauge their effect. This requires focused and sustained support in the form of advice, training or financial resources required, as well as a detailed understanding of industry needs. ConstructionSkills together with the other built environment Sector Skills Councils is well placed to support this.

9. Bibliography

9.1 Glossary of Acronyms

ARR	Annual Recruitment Requirement
CAD	Computer Aided Design
CERT	Carbon Emissions Reduction Target
CESP	Community Energy Savings Programme
CITB	Construction Industry Training Board
CSN	Construction Skills Network
EU	European Union
FE	Further Education
FIT	Feed in Tariff
FMB	Federation of Master Builders
GB	Great Britain
GDP	Gross Domestic Product
GVA	Gross Value Added
HE	Higher Education
HESA	Higher Education Statistics Agency
HVAC	Heating, Ventilating, and Air Conditioning
ICT	Information and Communications Technology
LFS	Labour Force Survey
MMC	Modern Method of Construction
NEC	Not Elsewhere Classified
NVQ	National Vocational Qualification
OECD	Organisation for Economic Co-operation and Development
ONS	Office for National Statistics
PAYE	Pay As You Earn
QCF	Qualifications and Credit Framework
R&M	Repair and Maintenance
RHI	Renewable Heat Incentive
ROI	Republic of Ireland
SCQF	Scottish Credit and Qualifications Framework
SESS	Scottish Employers Skill Survey
SHQS	Scottish Housing Quality Standard
SIC	Standard Industrial Classification
SOC	Standard Occupational Classification
SSA	Sector Skills Assessment
SSC	Sector Skills Council
SVQ	Scottish Vocational Qualification
SVQ	Scottish Vocational Qualification
UK	United Kingdom
VAT	Value Added Tax

9.2 Glossary of Terms

Term	Description
Craft training	Refers to skill acquired through experience in a trade, usually through work-based learning such as an Apprenticeship. Similarly a craft operative refers in a more general sense to an occupation requiring skill in any of certain kinds of work done with the hands, as distinguished from unskilled work or from a profession or business.
Manual worker	Defined as those working within SOC 2000 Major Groups 5, 8 and 9
Microgeneration	The small-scale generation of heat and power by individuals, small businesses and communities to meet their own needs, as alternatives to traditional centralized grid-connected power.
Non-manual worker	Defined as those working within SOC 2000 Major Groups 1, 2, 3, 4 and 7
Output	<p>Contractor's output is defined as the amount chargeable to customers for building and civil engineering work done in the relevant period excluding VAT. Contractors are asked to include the value of work done on their own initiative on buildings such as dwellings or offices for eventual sale or lease, and of work done by their own operatives on the construction and maintenance of their own premises. The value of goods made by the contractors themselves and used in the work is also included.</p> <p>Output does not include payments made to architects or consultants from other firms - this would also cover engineers and surveyors. It would include wages paid to such people if they were directly employed by the contractor.</p>
Private sector	With reference to construction activity private work is for a private owner or organisation or for a private developer, and includes work carried out by firms on their own initiative. It includes work where the private sector carries the majority of the risk/gain. In principle, all Private Finance Initiative (PFI) contracts are private.
Professional Services	Refers to activities that fall within SIC (2007) 71.1 Architectural and engineering activities and related technical consultancy and SIC (2007) 74.9 Other professional, scientific and technical activities n.e.c.
Public sector	With reference to construction activity public work is for any public authority such as government departments, public utilities, nationalised industries, universities, the Post Office, new town corporations, housing associations and so on.
Specialist Contracting Sector	Refers to activities that fall within SIC (2007) 43.1 Demolition and site preparation and SIC (2007) 43.9 Other specialised construction activities n.e.c.

9.3 Construction Skills 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
- SIC 45.22 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: Office for National Statistics, UK Standard Industrial Classification of Economic Activities 2003

9.4 Construction Skills 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
71.12/2	Engineering related scientific and technical consulting activities
71.12/9 and	Other engineering activities (not including engineering design for industrial process 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.
74.90/2	Quantity surveying activities

Source: Office for National Statistics, UK Standard Industrial Classification of Economic Activities 2007

9.5 Type of Work: Detailed Descriptions⁷²

Orders and output have been classified in accordance with revised descriptions given below from 1st quarter 1980. Prior to 1st quarter 1980 there were differences in definition.

Prior to 1st quarter 1985, telephone exchanges and cabling work for British Telecom were classified as communications work for the public sector. From 1st quarter 1985 this work has been classified to the private sector. From 1st quarter 1987 construction work for British Gas has been classified to the private sector. From 1st quarter 1990, construction work for water companies in England and Wales has been classified to the private sector. From 1st quarter 1991, construction work for electricity companies in England and Wales has been classified to the private sector. From 2nd quarter 1996 construction work for rail companies has been classified to the private sector.

Type of Work	Examples of Kind of Work Covered⁷³
(a) Public Sector Housing	Local authority housing schemes, hostels (except youth hostels), married quarters for the services and police; old peoples' homes; orphanages and children's remand homes; and the provision within housing sites of roads and services for gases, water, electricity, sewage and drainage.
(b) Private Sector Housing	All privately owned buildings for residential use, such as houses, flats and maisonettes, bungalows, cottages, vicarages, and provision of services to new developments.
(c) Infrastructure	
Water	Reservoirs, purification plants, dams (except for hydro-electric schemes), aqueducts, wells, conduits, water works, pumping stations, water mains, hydraulic works.
Sewerage	Sewerage disposal works, laying of sewers and surface drains.
Electricity	All buildings and civil engineering work for electrical undertakings such as power stations, dams and other works on hydro-electric schemes, sub-stations, laying of cables and the erection of overhead lines.
Gas	Gas works, gas mains and gas storage.
Communications	Post offices, sorting offices, telephone exchanges, switching centres, cables.
Air Transport	Air terminals, runways, hangars, reception halls, radar installations, perimeter fencing, etc, which are for use in connection with airfields.
Railways	Permanent way, tunnels, bridges, cuttings, stations, engine sheds, etc, and electrification of both surface and underground railways.

⁷² Office for National Statistics, Construction Statistics Annual 2010

⁷³ Mixed development schemes are included in the category which describes the major part of the scheme.

Harbours (Waterways)	All works and buildings directly connected with harbours, wharves, docks, piers, jetties (including oil jetties), canals and waterways, dredging, sea walls, embankments, and water defences.
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Roads	Roads, pavements, bridges, footpaths, lighting, tunnels, flyovers, fencing.
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(d) Non-Housing Excluding Infrastructure⁷⁴

Factories	Factories, shipyards, breweries, chemical works, coke ovens and furnaces (other than at steelworks), skill centres, laundries, refineries (other than oil), workshops, Royal Mint (in public sector).
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Warehouses	Warehouses, wholesale depots.
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Oil	Oil installations including refineries, distribution pipelines and terminals, production platforms (but not modules or rigs).
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Steel	Furnaces, coke ovens and other buildings directly concerned with the production of steel (excludes offices and constructional steelwork).
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Coal	All new coal mine construction such as sinking shafts, tunnelling, works and buildings at the pithead which are for use in connection with the pit. Open cast coal extraction is excluded.
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Schools and Colleges	Schools or colleges (including technical colleges and institutes of agriculture) except medical schools and junior special schools which are classified under 'Health'. Schools and colleges in the private sector are considered to be those financed wholly from private funds such as some religious colleges including their halls of residence.
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Universities	Universities including halls of residence, research establishments.
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Health	Hospitals including medical schools, clinics, surgeries (unless part of a house); medical research stations (except when part of a factory, school or university), welfare centres, centres for the handicapped and for rehabilitation; adult training centres and junior special schools.
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Offices	Office buildings, banks, embassies. Police HQ's, local and central government offices (including town halls) are classified to the public sector.
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⁷⁴ Private work is classified between industrial and commercial as follows:

Industrial – factories, Warehouses, Oil, Steel, Coal

Commercial – Schools and Colleges, Universities, Health, Offices, Entertainment, Garages, Shops, Agriculture, Miscellaneous.

Entertainment	Theatres, concert halls, cinemas, film studios, bowling alleys, clubs, hotels, public houses, restaurants, cafes, holiday camps, yacht marinas, dance halls, swimming pools, works and buildings at sports grounds, stadiums and other places of sport or recreation and for commercial television, betting shops, youth hostels and centres; service areas on motorways are also classified in this category as the garage is usually only a small part of the complex which includes cafes and restaurants.
Garages	Buildings for storage, repair and maintenance of road vehicles; transport workshops, bus depots, road goods transport depots and car parks.
Shops	All buildings for retail distribution such as shops, department stores, retail markets and showrooms.
Agriculture	All buildings and work on farms, market gardens and horticultural establishments such as barns, animal houses, fencing, stores, greenhouses, boiler houses, agricultural and fen drainage and veterinary clinics, but not houses (see category (c)), or buildings solely or mainly for retail sales which are included under 'shops'.
Miscellaneous	All work not clearly covered by any other heading, such as: fire stations; barracks for the forces (except married quarters, classified under 'Housing'), naval dockyards; RAF airfields, police stations, prisons, reformatories, remand homes, borstals, civil defence work, UK Atomic Energy Authority work, council depots, public conveniences, museums, conference centres, crematoria, libraries, caravan sites, except those at holiday resorts, exhibitions; wholesale markets, Royal Ordnance factories.

Repair and Maintenance

This concerns work, which is either repairing something which is broken, or maintaining it to an existing standard. For housing output, this includes repairs, maintenance, improvements, house/ flat conversions, extensions, alterations and redecoration on existing housing. For non housing this includes repairs, maintenance and redecoration on existing buildings, which are not housing, such as schools, offices, roads, shops.

9.6 ConstructionSkills Footprint, SOC 2000

Details of ConstructionSkills' SOC footprint are shown below. Table 27 details the occupations for which ConstructionSkills has exclusive or primary responsibility. ConstructionSkills takes a lead in the development and maintenance of the related NOS. These represent occupations that are typically associated with the construction sector. Table 28 details occupations which ConstructionSkills shares with other SSCs. In this respect these are occupations that provide support functions for firms operating within the construction sector or are occupations for which others have the primary responsibility.

The full list of SOC detailed here gives an indication of how difficult it would be to use SOC codes to identify the size of the sectors given that many occupations detailed within Table 28 feature in almost every sector.

Table 10 - Definition of the ConstructionSkills sector, Exclusive and Primary SOC Codes

SOC	SOC Description
1122	Managers in construction
2113	Physicists, geologists & meteorologists
2121	Civil engineers
2431	Architects
2432	Town planners
2433	Quantity surveyors
3114	Building & civil engineering technicians
3121	Architectural technologists & town plan technicians
3122	Draughtspersons
3123	Building inspectors
3421	Graphic Designers
5216	Pipe fitters
5311	Steel erectors
5312	Bricklayers, masons
5313	Roofers roof tilers and slaters
5315	Carpenters and joiners
5319	Construction trades n.e.c.
5321	Plasterers
5322	Floorers and wall tilers
5323	Painters and decorators
8141	Scaffolders, staggers riggers
8142	Road construction operatives
8149	Construction operatives n.e.c.
8221	Crane drivers
8229	Mobile machine drivers & operatives
9121	Labourers building & woodworking trades
9129	Labourers other const trades n.e.c.

Source: Office for National Statistics, UK Standard Occupational Classification of Economic Activities 2000

Table 11 - Definition of the ConstructionSkills sector, Shared SOC Codes

SOC	SOC Description
1112	Directors & chief executives of major organisations
1121	Production works & maintenance managers
1132	Marketing and sales managers
1142	Customer care managers
1152	Office managers
1231	Property housing and land managers
1239	Managers and property In other services n.e.c.
2128	Planning and quality control engineers
2129	Engineering professionals n.e.c.
2434	Chartered surveyors (not quantity survey)
3111	Laboratory technicians
3531	Estimators, valuers and assessors
3541	Buyers and purchasing officers
3542	Sales representatives
3551	Conservation & environ protection officers
3567	Occupational hygienists & health safety officers
4150	General office assistants or clerks
5316	Glaziers, window fabric and fitters
7129	Sales related occupations n.e.c.
8121	Paper and wood machine operatives
8129	Plant and machine operatives n.e.c.
9219	Elementary office occupations n.e.c.

Source: Office for National Statistics, UK Standard Occupational Classification of Economic Activities 2000

9.7 Methodology Paper

This methodology paper provides a comprehensive overview of ConstructionSkills research utilised within this report.

Name ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training	Date Wave 10: October 2010
Aim/Objectives The Employer Panel seeks to complement and enhance ConstructionSkills' existing research by providing an open and regular programme of employer consultation, allowing a reality check for anecdotal reports and enabling employer reactions to be gained on 'hot topics' of the moment. A particular aim was to enable a more comprehensive understanding of actual behavioural issues influencing the decision(s) to train, the route(s) taken and the method(s) used.	
Methodology Each wave of research comprises 30 Qualitative and 1,500 quantitative interviews (both phases conducted by telephone) with employers and the self-employed operating within the traditional building sector (SIC 45) and the Professional Services sector (SIC 74.20).	

Name ConstructionSkills and Experian, Construction Skills Network, 2011-2015	Date 2010
Aim/Objectives The aim of the Construction Skills Network (CSN) is to assist the industry and its stakeholders with planning to meet future employment and skills requirements, by providing sector intelligence based upon robust data and analysing capacity, productivity and skills. The CSN is co-ordinated by ConstructionSkills in conjunction with Experian, who provide information and analytical services. The CSN has over 700 members (including representatives from Government, Federations and Employers) who attend observatory meetings and contribute their skills and knowledge. At the heart of the CSN are a number of forecasting models which generate forecasts of employment requirements within the industry for a range of occupational groups. The models are designed and managed by Experian under the independent guidance and validation of the Technical Reference Group, comprised of statisticians and modelling experts.	
Methodology The model approach relies on a combination of primary research and views from the CSN to facilitate it. National data is used as the basis for the assumptions that augment the models, which are then adjusted with the assistance of the Observatories and National Group. Each English region, Wales, Scotland and Northern Ireland has a separate model (although all models are inter-related due to labour movements) and, in addition, there is one national model that acts as a constraint to the individual models and enables best use to be made of the most robust data (which is available at the national level). The models work by forecasting demand and supply of skilled workers separately. The difference between demand and supply forms the employment requirement.	

Name ConstructionSkills and Foras Áiseanna Saothair (FÁS). Workforce Mobility and Skills in the UK Construction Sector	Date September 2007
Aim/Objectives The overall aim of the study was to provide reliable data on the nature of the construction workforce in regard to their competence/qualification levels and the extent of occupational and geographic mobility within the workforce. More specifically, the key objectives of the research were to examine: <ul style="list-style-type: none"> ➤ the qualification and skill levels of the construction workforce in the UK and ROI ➤ the extent to which the workforce in each nation/region is constituted of workers originating or living in other parts of the UK/ROI (or further afield), and general mobility and travel to work issues ➤ the nature of the mobile workforce/'imported' workforce in terms of their occupations and their competence/qualification levels ➤ the scale and extent of occupational mobility within the construction workforce to see how workers in construction occupations change or keep their occupations over time, and related to this the extent to which managers have received training specifically to enhance their managerial skills <p>The focus for the survey was on site-based manual occupations, thus excluding associated clerical and sales occupations and professions such as architects, surveyors and engineers.</p>	
Methodology Phase 1 – Exploratory desk-based research Phase 2 – Telephone survey in order to gain willingness from sites to take part in the research Phase 3 - Face to face interviews with 3,877 workers across 312 sites in the UK/ROI	

Name ConstructionSkills Skills and Training in the Construction Industry, 2009.	Date 2009
Aim/Objectives The primary aim of this project is to provide robust and reliable information from both employers and the self-employed within the UK construction industry on skill deficiencies and workforce development.	
Methodology The study was UK-wide and covered the full ConstructionSkills footprint (professional services SIC74.2) and the construction contracting sector (SIC45, excluding plumbing and electrical firms (SIC 45.31 and 45.33, which fall within the footprint of SummitSkills, the Sector Skills Council for the Building Services Engineering) A total of 1,202 interviews were conducted via a quantitative telephone survey across the UK:	

Name ConstructionSkills Training and the Built Environment	Date 2010
Aim/Objectives This project undertaken annually aims to measure the number of people entering construction training across Great Britain. These include those coming through ConstructionSkills' own managing agency and those entering other formal certificated training at craft and technical level. The survey also aims to discover the total capacity for skilled manual trades training that is currently available	
Methodology Postal questionnaire sent to all training providers across Great Britain who provide formal certificated training at craft and technical level.	

Name ConstructionSkills, Understanding Future Change in Construction	Date 2010
Aim/Objectives The aim of this research is to establish an evidence base for ConstructionSkills on future skills across the construction sector. This takes the form of a high level overview of where the construction industry is expected to be in the short-term (1-3 years), medium-term (3-5 years) and long-term (5-10 years), and the resulting generic skills and training needs. The evidence base is to be enlightened by current construction industry views, utilised to underpin future research requirements and inform strategic thinking.	
Methodology Multi-faceted approach was adopted, to gather data through a range of separate routes: Phase 1 - Literature review Phase 2 – Focus Groups across Great Britain - attended by representatives from nearly 70 stakeholder organisations including those within, as well as impacting upon, the construction sector Phase 3 - In-depth qualitative telephone interviews - 10 in England, 10 in Scotland and 9 in Wales with key stakeholders in the construction sector	

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