Sector Skills Assessment for the Construction Sector 2010

ConstructionSkills Northern Ireland Report

ConstructionSkills Insight

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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 Northern Ireland. Separate reports are available covering the United Kingdom, England, Scotland 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 CITB-ConstructionSkills Northern Ireland has identified four key priorities for addressing the future skills and productivity needs of Northern Ireland'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, and 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 being 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 consulted 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 four 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 present an assessment of skills needs and steps taken to address identified deficiencies.

Chapter 5. examines the evidence for what are expected to be the main drivers for skills change in the Northern Ireland 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.

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

2.1 What Drives Skills Demand?

2.1.1 Contribution of the Sector

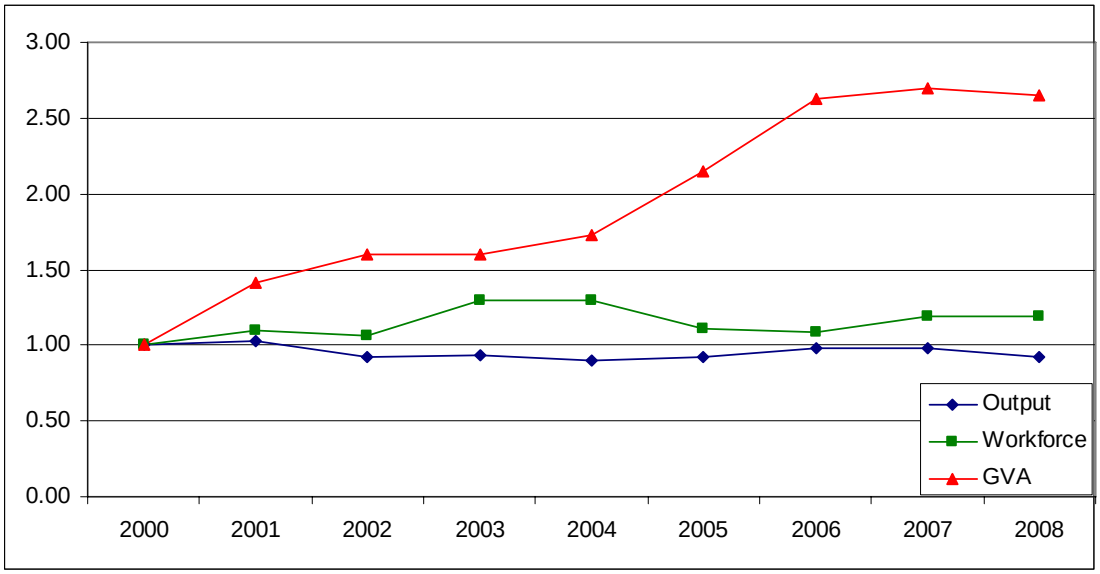
ConstructionSkills covers a wide range of activities in terms of the planning, design, construction and maintenance of the built environment.

Construction is a pre-requisite to all other economic activity and forms a significant part of Northern Ireland's economy in terms of employment and wealth generation.

Employing 64,000[1] people the combined employment of construction workers and professionals account for 8% of the Northern Ireland workforce, and with output in 2009 of £2.79billion[2] (at constant 2005 prices) it generated £2.46 billion[3] in 2008 of value added - all of which is actually produced from a fairly fragmented sector.

Chart 1 below compares the GVA, output and workforce of Northern Ireland's construction industry from 2000 to 2008. The data has been indexed using 2000 as the base year.

Chart 1 - Comparison of GVA, Output and Workforce: Northern Ireland Construction Industry: 2000-2008



Source: Office for National Statistics, Labour Force Survey; Construction Skills Network; Northern Ireland Annual Business Inquiry

The construction industry is generally considered a barometer of wider economic health. As a consequence, the signs still present a pessimistic picture in the medium-term.

Unfortunately the industry is notorious for being first into and last out of recession.

2.1.2 Structure of the Sector

A feature of the sector is that there are a small number of large firms and a very long tail of small firms. Across the Northern Ireland construction contracting sector there are 11,885 firms registered for VAT/ operate a PAYE scheme[4], of which the vast majority

[1] Office for National Statistics, Labour Force Survey, Spring 2010. Based on SIC2007
[2] ConstructionSkills and Experian. Construction Skills Network 2011-2015. 2010
[3] Northern Ireland Annual Business Inquiry (NIABI) 2008, 31st March 2010.
[4] Central Survey Unit of the Northern Ireland Statistics and Research Agency, on behalf of the Department of Finance and Personnel. Northern Ireland Construction Bulletin 1st April to 30th June 2010. 20th October 2010

(91%) employ less than 10 employees, compared to less than 1% who employ more than 250 people.

Furthermore, 27,201 people working within the sector are self-employed[5], at 42% of the total workforce (64,037) this is a much higher share compared to the rest of the UK - England (38%), Wales (36%) and Scotland (22%).

Self-employment is particularly high in the main craft trades (Bricklaying, Wood Trades, Painters & Decorators and Plasterers) where it averages 63% of the workforce.

It is also evident that age is a factor in terms of self-employment. Approximately two-fifths (43%) self-employed workers are aged 45 and over. This could be an indication that high levels of demand, particularly for highly skilled workers, and sufficiently enticing re-numeration is keeping individuals in the workplace, or that self-employed workers are unable to take retirement in the same way as employees.

Employment status very much reflects the nature of work within the sector. The vast majority of work is undertaken on a project-by-project basis. Consequently, contractors tend to employ a core workforce complemented by short-term contracts as and when they need them (also known as labour only sub-contracting).

The flexibility of such a large pool of self-employed labour together with fixed term or fixed output contracts offers significant financial advantages to prime contractors in respect of labour costs. The disadvantage however, is the lack of investment in skills and qualifications by those who are self-employed and migrate from job-to-job with little security of income and few of the advantages of direct employment. It also means that competition between companies to address their skill gaps and shortages can often lead to a situation where all are vying to employ the same ever-decreasing groups of trained people.

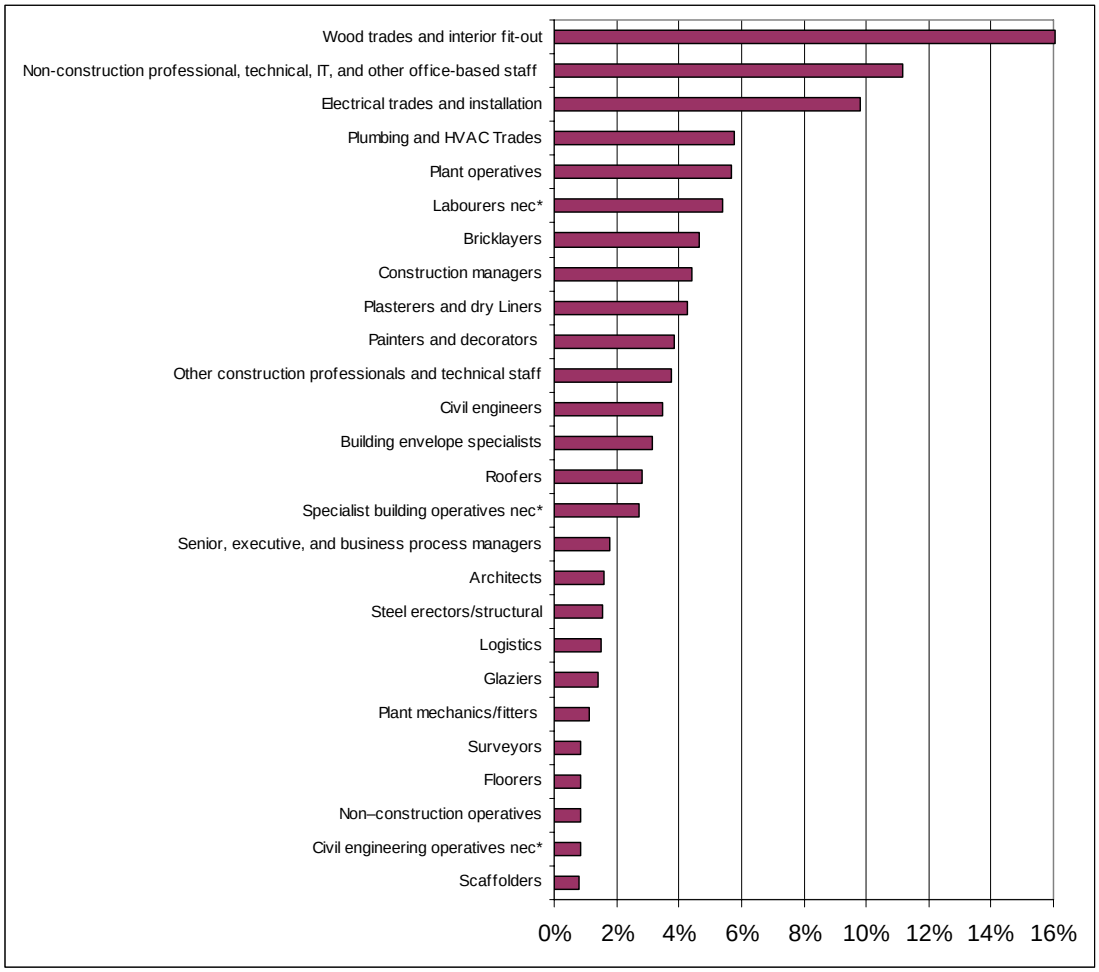
There is a strong tendency for career progression to lead towards self-employment[6], particularly in the main construction trades, where the financial rewards are perceived as being greater. ConstructionSkills' research shows that the incidence of self-employment in Northern Ireland rises from just over one in ten of those with between one and five years experience, to around a third (32%) of those with five or more years experience[7]. This has obvious implications on the future training of both the individuals moving to self-employment, and the ability for the industry to provide sufficient opportunities for those wishing to join the industry and train.

2.1.3 Employment Characteristics

In terms of occupational structure, manual workers[8] dominate, representing 70% of the total workforce. The remaining 30% are non-manual workers[9], including managers, and all those working in the professional services sector[10]. Northern Ireland's construction workforce has the largest share of manual workers compared to the rest of the UK – where it varies from 48% in London to 64% in Wales. The largest occupational group, representing 16% of the total construction workforce in Northern Ireland, is wood trades[11].

[5] Office for National Statistics, Labour Force Survey, Spring 2010. Based on SIC2007
[6] ConstructionSkills and Foras Áiseanna Saothair (FÁS). Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007. Face to face interviews with 263 with site based workers in Northern Ireland
[7] ConstructionSkills and Foras Áiseanna Saothair (FÁS). Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007. Face to face interviews with 263 with site based workers in Northern Ireland
[8] Manual workers are defined as those working within SOC2000 groups 5, 8 and 9
[9] Non-manual workers are defined as those wording with SOC2000 groups 1, 2, 3, 4 and 7
[10] Office for National Statistics, Labour Force Survey, Spring 2010. Based on SIC2007
[11] ConstructionSkills and Experian, Construction Skills Network, 2010

Chart 2 - Construction Employment by Occupation, Northern Ireland: 2009



Source: Construction Skills Network Model; Experian

Patterns of full-time working remain dominant in the industry. The Northern Ireland Quarterly Employment Survey reported that 8% of employee jobs in construction were part-time[12]. Which is significantly lower than across all industries, where just over a third (36%) of employee jobs are part-time. This is undoubtedly due to the small share of females within the construction industry, as half (50%) of all female employee jobs are part-time, whereas only 20% of male employees work on a part-time basis.

The under-representation of women remains a priority issue for the construction industry in Northern Ireland. Currently women account for 10% of the total Northern Ireland construction workforce. The majority of women (98%) work in non-manual roles (predominately in a clerical capacity) whereas the remaining 2% undertake a manual trade[13].

Employers have indicated a number of reasons for difficulties in encouraging females to enter into the construction industry including the nature of the work, and have cited the need for schools to promote the construction sector as a viable career for everyone instead of consistent endorsement of the traditional teaching and health professions as careers for females. Encouragingly the recent Comprehensive Spending Review (CSR) renewed the commitment to fund science, technology, engineering and mathematics (STEM) subjects[14].

[12] The Northern Ireland Quarterly Employment Survey, September 2010
[13] Office for National Statistics, Labour Force Survey, Spring 2010. Based on SIC2007
[14] [14] HM Treasury, Spending Review, October 2010

Employers are often reluctant to employ female staff being concerned about the lack of toilet facilities on site, the potential expense of maternity leave, and the possibility of mixed relations in the workplace which may cause unnecessary hassle for other employees and the employer. The promotion of the construction industry to women can only occur if the negative perceptions of the industry are dispelled and the on-site conditions addressed in order to accommodate women[15].

Northern Ireland has an extremely 'self-contained' workforce: Research[16] indicates that the vast majority (99%) of workers had their permanent residence in Northern Ireland and 92% of them were originally from Northern Ireland, higher in each case than for any other nation/region. Only 3% were in temporary accommodation, compared with 7% in the UK/ROI overall. Nine in ten (92%) had spent most or their entire construction career in Northern Ireland, compared with 76% for the UK/ROI workforce as a whole.

Conversely, only 4% of the entire UK/ROI workforce comprised workers whose permanent address was in Northern Ireland, but who were working in another nation/region (overall 18% of the sample were working in a nation/region other than the one they had their permanent address in).

The average (mean) distance travelled to work was 20 miles each way, compared to a UK/ROI average of 24. However, Northern Ireland workers were less likely than average to have extremely short journeys; 14% travelled less than five miles, compared with 24% across the UK/ROI.

Construction workers in Northern Ireland were more likely than average to have only worked on one or two types of construction project (67% compared with 53% on average). Understandably this varied with length of experience, with 63% of those with up to two years' experience having only worked on one type of project, falling to 41% of those with more experience.

2.1.4 Recruitment and Retention

Despite its reputation as a physically demanding industry, construction requires an increasingly diverse, highly skilled and flexible workforce. This applies to both workers in both manuals and non-manuals roles.

The sector has traditionally suffered from an unfortunate, and in many respects unfair, image in terms of low pay, poor working environment and lack of job security, particularly in respect of craft and operative roles. Such perceptions have made it difficult for employers to attract talent.

The construction industry is notoriously cyclical and very sensitive to changes in the macro-economy. This is reflected in workforce flows. The construction industry has at times of recession lost significant numbers of workers, many of whom do not return. Indeed, there is now a very real risk that the outflow of skilled workers through redundancy as a result of the recession and the natural flow to other sectors will adversely impact on the recovery as it gains momentum.

Furthermore, it is estimated that the number of young people reaching working age (15-19 years old) will fall by 15,000 between 2008 and 2020[17] therefore the industry will have to facilitate entry for older age and minority groups.

[15] CITB Northern Ireland. Research into Training and Skills Needs. February 2007

[16] ConstructionSkills and Foras Áiseanna Saothair (FÁS). Workforce Mobility and Skills in the UK Construction Sector – Northern Ireland Report, September 2007. Face to face interviews with 263 with site based workers in Northern Ireland

[17] NISRA. Project Population (2008 based) by sex and age 2008-2051. www.nisra.gov.uk

2.2 Current Performance - What is Driving Change?

2.2.1 The Economy

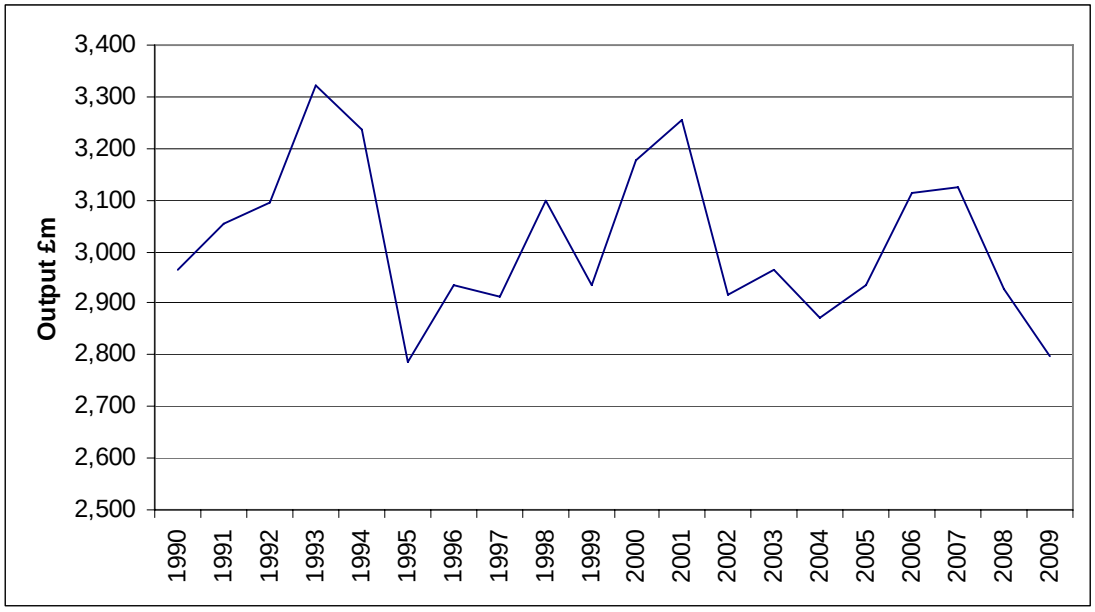
Increasing concerns have surfaced in the Province regarding the future of funding for the Northern Ireland Investment Strategy and this has been further exacerbated by the recent announcements as part of the Comprehensive Spending Review, which indicated a 37% cumulative real decline in the Departmental Capital Budget for the Province over the 4 year period of the Spending Review.

It is these concerns that are leading to a fairly modest rate of output growth for the construction industry in the Province over the next 5 years. Unfortunately for Northern Ireland, its economy is more reliant on the public sector than the UK as a whole, as is its construction industry and thus public expenditure cuts are likely to affect the Province disproportionately.

Construction output in Northern Ireland totalled £2.79bn in 2005 prices in 2009, a 5% decline on the previous year. The first half of 2010 saw a further decline in construction output in the Province. Construction output in constant prices fell by 5.3% in Q1 2010 compared with the previous quarter and by 6.3% in Q2 2010, with the infrastructure, private commercial and private non-residential repair and maintenance sectors being particularly weak in the first half of the year.

It remains the case that the trend in construction output in Northern Ireland has largely been flat since 2000, and in fact the onset of the recession means that 2008's outturn was nearly 8% down in real terms when compared with 2000.

Chart 3 - Construction Output in £m (2005 prices), Northern Ireland: 1990-2009



Source: Office for National Statistics, Labour Force Survey; ConstructionSkills Network; Experian

Overall, the effect of the recession has resulted in reduced construction output in the short-term although the provisional medium to long-term forecast is for growth of around 1.6% per year between 2011and 2015[18]. However, in light of the revised downwards construction output figures for the first half of 2010 and the recent Comprehensive Spending Review announcements, the 1.6% provisional output growth forecast for NI by the Construction Skills Network is expected to be adjusted downwards slightly prior to being finalised early in 2011.

[18] Construction Skills and Experian, Construction Skills Network, 2010.

The 1.6% annual average output growth rates leads to little change in demand for many occupations between 2011 and 2015 once projected productivity gains are taken into account. Anecdotal evidence also exists of a considerable amount of short-time working in the industry, which means that already existing excess capacity will need to be taken up before employers look to take on new staff as the projected recovery starts to strengthen.

Recent consultation with construction employers in Northern Ireland[19] reported that over half (52%) had laid off staff as a result of the recession. Redundancies have affected all occupational groups from the unskilled to managers and professionals with labourers / general operatives being the occupation most likely to have been made redundant (55%) followed by bricklayers (14%).

Encouragingly the survey indicates that most firms are confident of surviving the recession: 70% were confident compared to 18% who stated they were not confident. Both these findings remain unchanged from 2009, however it appears employers in Northern Ireland were slightly less optimistic as only 10% of firms across the UK stated they were not confident of surviving the recession.

Certainly with evidence of recovery in the global economy attention is moving from the depth of the recession towards its exit path. However, the sector will emerge from the recession into a much changed social and economic landscape of high levels of unemployment, particularly amongst 18-24[20] year olds and low-skilled workers, reduced household wealth, significant public spending cuts, more prudent lending from the banks and an age of austerity and rebalancing.

Consequently, the spotlight is very much focussed on how construction can adapt to the changes without undermining potential for future growth. Recovery from previous recessions has been hindered by skills gaps and shortages caused by job losses albeit framed by much faster growth rates than are currently forecast. Whilst contractors have endeavoured to retain capacity through the current recession, experience suggests that skills gaps and shortages will become evident as growth returns to the sector, although it remains to be seen how this will take shape. Low carbon working is thought to be a factor.

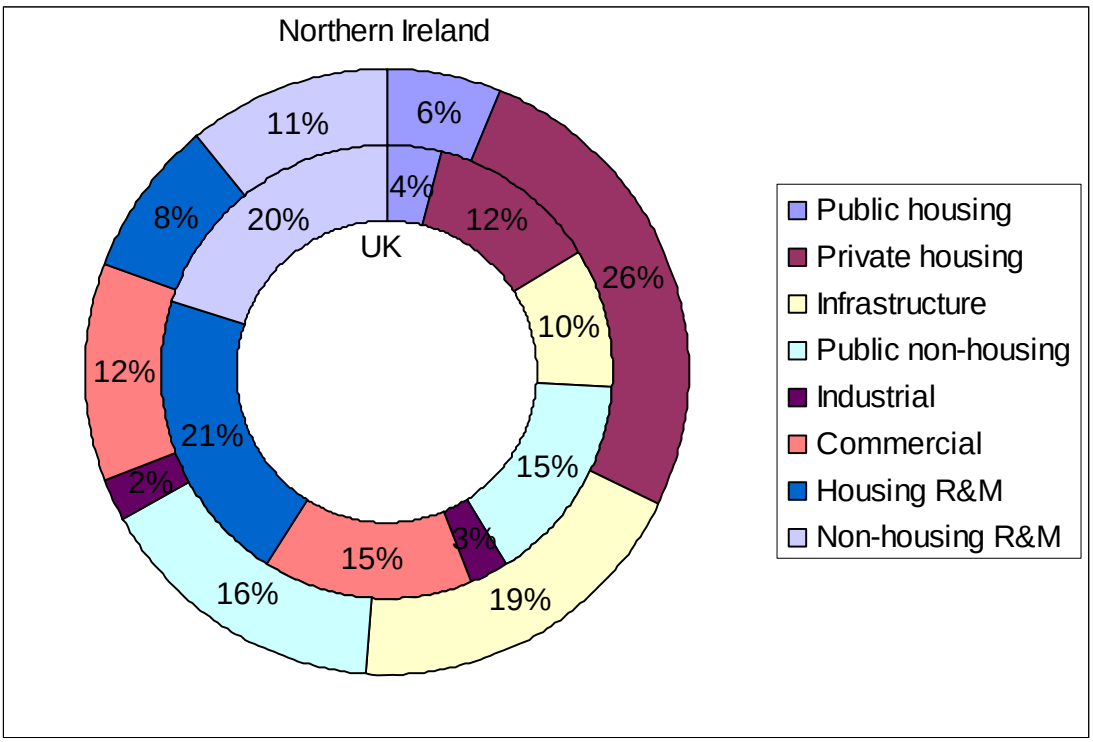
The exodus of skilled workers from the industry through redundancy and retirement will also impact on the ability of the industry to transfer knowledge from experienced workers, potentially further hindering long-term growth.

2.2.2 Current Activity

Northern Ireland has a significantly different structure to its construction industry than the rest of the UK, with a very small R&M sector. In 2009 it accounted for only 19% of output in the province compared with 41% for the UK as a whole. In this respect the structure of the industry in Northern Ireland is more similar to that in the Republic of Ireland, where the R&M sector also takes a relatively small proportion of the construction cake (32% in 2009)[21].

[19] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), 2010, Employer Panel Consultation with 102 employers and sole traders across construction industry in Northern Ireland (unpublished)
[20] DETI. Unemployment Statistics, June-August 2010. Unemployment rate for 18-24 year olds is 19%.
[21] DKM Economic Consultants, Annual Construction Industry Review 2009 and Outlook 2010-2012. October 2010

Chart 4 - Construction Industry Structure 2009: Northern Ireland v UK



Source: Construction Skills Network; Experian

Construction output in the Province for Q2 2010 at £591 million in constant 2005 prices, was a new quarterly low since 2000. Construction output in NI in constant prices fell by 5.3% in Q1 2010 compared with the previous quarter and by 6.3% in Q2. This compares with a decline of 0.8% in Q1 for the UK and a rise of close to 10% in Q2 for the UK, suggesting that the Northern Ireland construction industry has not held up as well as the UK overall so far in 2010.[22] The infrastructure, private commercial and private non-residential repair and maintenance sectors were particularly weak in the first half of the year in Northern Ireland. The level of growth for the construction industry in the Province going forward, is very much dependent on how public expenditure cuts are applied and this is currently in the hands of the NI Executive.

Over the next five years the private housing, industrial and commercial sectors are expected to perform better than the infrastructure, public housing and public non-housing sectors.

2.2.3 Constraints on Activity

Whilst the volume of activity in the sector is highly cyclic there is 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.

A lack of demand (the need to increase sales/get more work in) was reported as the key business challenge currently facing firms in Northern Ireland.[23] Looking forward the recent survey highlights which factors other than the downturn could constrain their business in the next year, a quarter of firms (25%) cited a lack of credit/finance, while only 1% foresaw recruitment difficulties.

[22] ConstructionSkills and Experian, Construction Skills Network, 2010
[23] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), 2010, Employer Panel Consultation with 102 employers and sole traders across construction industry in Northern Ireland (unpublished)

2.2.4 Globalisation

The global nature of the recession affected markets and trade worldwide, and construction suffered in the vast majority of developed economies.

The worldwide decline in construction activity most notably impacted on UK professional services, and was particularly visible in the reduced demand across the Middle East and Asia. Construction supports high-value net-export services such as engineering consultancy and design, architectural activities, and property management, which were hit particularly hard during the recession.

ConstructionSkills' research[24] amongst professional practices has indicated that a fall in fee income has particularly affected firms in Northern Ireland – three quarters (76%) reported a decrease compared to only 6% that had seen fee income increase over the past 12 months. These findings for the UK were 54% and 11% respectively.

As well as exporting skills and expertise the UK construction industry has also benefited from migration. Construction is, and always has been, a migratory industry. 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 abroad. The experience is also closely linked to economic cycles. Indeed, the tradition of Irish workers finding employment in the UK during periods of high demand and the experience of UK workers migrating to Germany during the early 1980s when work was scarce at home is indicative of the fact that migration is linked to fairly wide economic influences and that international travel has been common for some time. However, in today's global market, itinerant construction workers come from all over Europe and beyond.

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

It is difficult to predict the future flows of migrant workers as there are many influencing factors. However, it is anticipated that increasing globalisation of goods and services and the further integration of emerging economies will increase the supply of low skilled workers and overseas production activities will increase the competitive pressures on firms and the indigenous workforce.

Globalisation has in addition led to increased international competition and in turn demand for higher skills. In construction this is particularly the case for professionals such as architects and civil engineers. The UK higher education and training sector has become a global leader in the supply of skills. The recession, although leading to immediate job losses, has meant people returning to or extending their education and in turn has fuelled increased numbers of course applicants.

[24] ConstructionSkills and Construction Industry Council, Impact of the Recession on Construction Professionals 2009. Qualitative and quantitative survey with 17 employers in Northern Ireland. Please note low base size.

Table 1 - First Degree Built Environment Student Enrolments in Northern Ireland, United Kingdom Domiciled and Non-United Kingdom Domiciled: 2008/09

Subject	Total	UK Domiciled	Non-UK Domiciled	%Non-UK Domiciled
Civil Engineering	205	189	16	8%
Architecture	228	192	36	16%
Building	369	363	6	2%
Planning (urban, rural & regional)	112	111	1	1%
Total	**914**	**855**	**59**	**6%**

Source: Higher Education Statistics Authority (HESA) 2010

The latest available data (2008/2009) from the Higher Education Statistics Authority (HESA) shows that at higher education institutions in Northern Ireland, 6% of built environment course enrolments are from Non-UK domiciled students. Proportions are highest for Architecture and Civil Engineering courses at 16% and 8% of students respectively.

These findings are unsurprising as Northern Ireland is unique, in sharing a border with a country outside the UK. Indeed further analysis of all enrolments at Higher Education Institutions in Northern Ireland reported that the largest group of students from outside the province were domiciled in the Republic of Ireland (7%) while the remaining students were from Great Britain (3%), Other EU countries (1%) and from Other Overseas countries (3%)[25].

2.2.5 Technology

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

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

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, with emerging opportunities around the low carbon agenda.

Just over a fifth (22%) of companies from Northern Ireland questioned on the ConstructionSkills' Employer Panel had expanded into different parts of the market or changed the focus of their work in response to the recession[26]. The most common areas expanded into included smaller jobs (39%), building refurbishment / installation (20%) and expanding the products and services offered (20%).

In terms of recovery there will be a renewed emphasis on ensuring efficient working. Lower levels of employment will initially result in a need to achieve more with less and

[25] Department for Employment and Learning. Statistical Bulletin - Enrolments at UK Higher Education Institutions: Northern Ireland analysis 2008/09

[26] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), 2010, Employer Panel Consultation with 102 employers and sole traders across construction industry in Northern Ireland (unpublished)

this presents an opportunity for product and process innovation. However, the long-term ambition to drive up productivity is expected to facilitate and be facilitated by increased technological change, which will in turn transform some occupations in respect of both the numbers required and the activities undertaken.

Evidence for this is provided by the Employer Panel, which reported a quarter (26%) of firms in Northern Ireland considered skills to be more important as a result of the recession or by new construction methods and technologies. Job specific skills were considered the most important (33%) and in shortest supply!

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.

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

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

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

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

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

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

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.

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.

There are however structural barriers to innovation in the sector that will impede and slow change.

2.2.6 Demographics

Population characteristics (such as size, growth, density, distribution, age, gender and ethnicity) drive supply and demand. Demographic changes shape the expectations of customers, as well as influencing the ability of industry to meet their demands. The needs of the population in terms of housing, healthcare, education, infrastructure, work and leisure drive construction outputs, yet these are only achievable if there is sufficient capacity in terms of labour and skills.

Increasing life expectancy, an ageing and more culturally diverse population, intensified urbanisation, increased mobility within the workforce and a growing rate of household formation present the construction industry with some major demographic challenges.

The population of Northern Ireland is projected to increase by 6% by 2020[27], mainly through natural growth (more births than deaths), together with increasing rates of household formation is driving the demand for homes and public services.

Population growth combined with changing age structures and a continuing trend towards smaller households means that one-person households are projected to rise from 204,500 in 2008 to 227,300 in 2013 (11%). In contrast the number of households with four or more persons is projected to remain stable (177,800 in 2008 compared to 178,000 in 2013)[28].

It is estimated that between 2001 and 2025 an additional 250,000 housing units are required[29], yet less than 7,500 new dwellings were started in 2009[30]. This clearly indicates the scale of the increase in production which must be sustained if future demands are to be met. This further demonstrates the vital role construction plays in fulfilling the expectations of both the Government and society as a whole.

Northern Ireland, like other industrialised countries, has an ageing population. 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.

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[27] Northern Ireland Statistics & Research Agency, Statistical Report – 2008 based household projections for areas within Northern Ireland. 26 August 2010

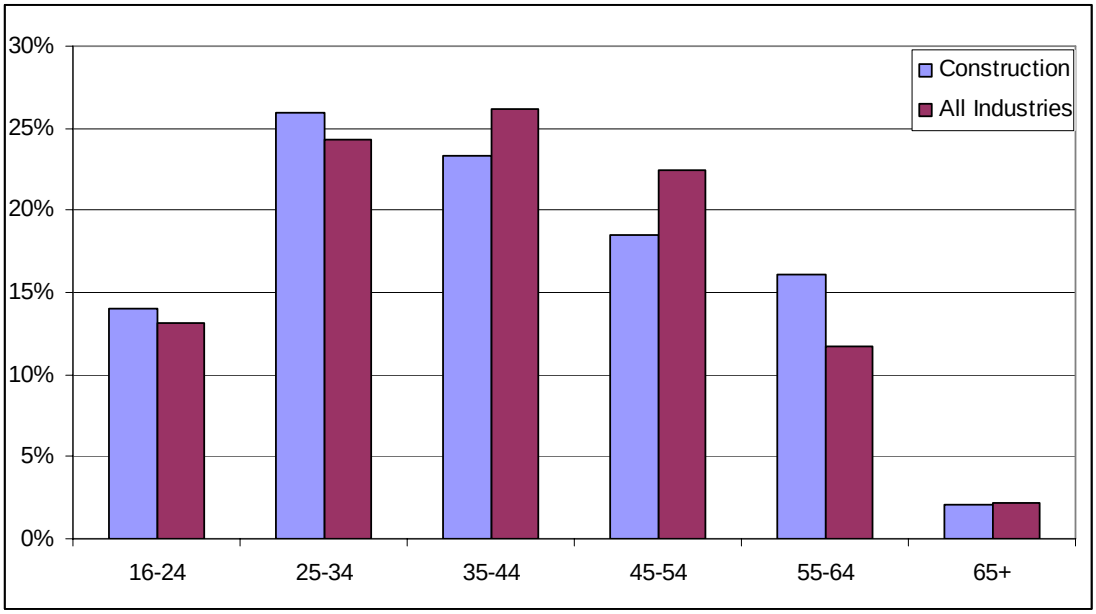
[28] Northern Ireland Statistics & Research Agency, Statistical Report – 2008 based household projections for areas within Northern Ireland. 26 August 2010

[29] Department for Regional Development. Shaping our Future: Regional Development Strategy 2025

[30] Department for Social Development. Northern Ireland Housing Bulletin. 1st Jan to 30th March 2010

The age profile of the construction industry in Northern Ireland differs quite significantly to the overall economy by having a much younger workforce, with an age profile that is biased towards the 25-29 age groups[31].

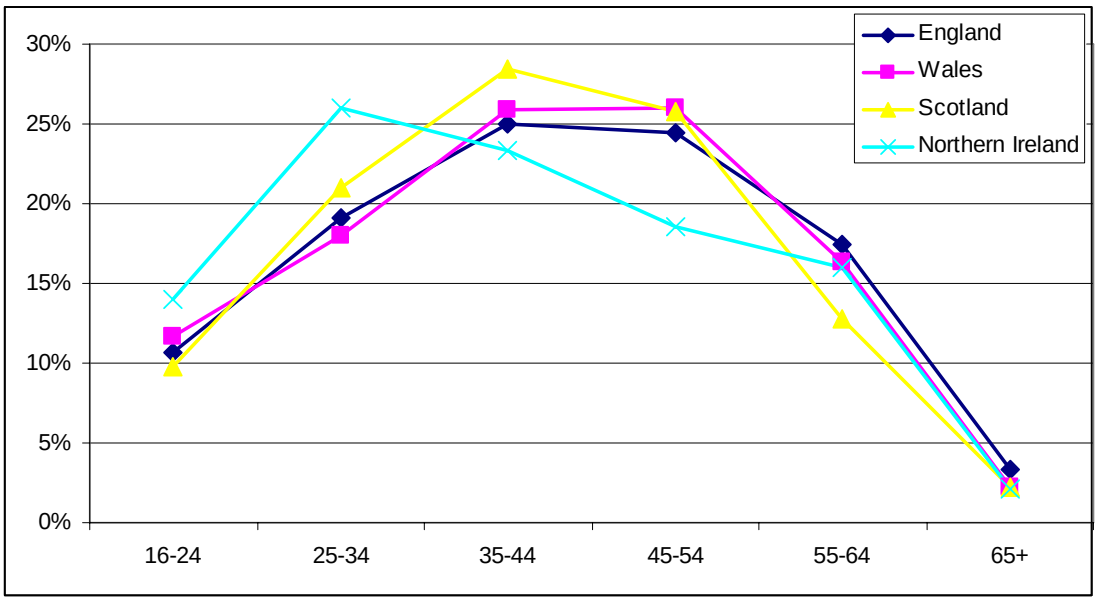
Chart 5 - Age Profile of Construction Industry v All Industries, Northern Ireland: 2010



Source: Office for National Statistics, Labour Force Survey 2010

This is further highlighted when age profile is compared across the UK construction industry.

Chart 6 - Age Profile of Construction Industry, All nations across the United Kingdom: 2010



Source: Office for National Statistics, Labour Force Survey 2010

[31] Office for National Statistics, Labour Force Survey, Spring 2010. Based on SIC2007

2.2.7 Legislation

Legislation remains a key driver for change across industry sectors as a whole and within the construction sector specifically, and in many respects is the principle driver.

Policy around improving the quality of work (working time directive, parental rights, minimum wage, health and safety) and reducing damage to the environment (planning legislation, climate change, carbon reduction commitments, aggregate tax etc) is undeniably changing the way the industry works. Although legislation changes are likely to have a positive impact on the workforce, as they generally promote improved employment conditions for the existing workforce and potential new starters, these changes are also likely to increase operational costs resulting, in some cases, of avoidance measures in terms of health and safety.

The recent Comprehensive Spending Review[32] announced that the state pension age for both men and women would rise from 65 to 66 in 10 year's time, six years earlier than previously announced.

As with any sector, change resulting from legislation is generally likely to be gradual as firms respond and get to grips with the implications of new legislation. In the construction sector particularly, due to the high proportion of small firms, high levels of self-employment and wide use of sub-contracting changes are likely to take time to filter through.

Despite all the existing legislation, health and safety remains a key concern for the construction sector. However the rates of fatalities in the construction industry in Northern Ireland is currently at its lowest over the past decade and dramatically reduced from a high of 12.7 per 100,000 in 2002/2003 to 1.5 per 100,000 workers in 2009/10, which is equivalent to the rate in all industries (1.1). In 2009/2010 the number of accidents resulting in absence over 3 days was 147, the number of major accidents was 81 and the number of fatalities was one.[33].

Legislation relating to the UK construction industry as a whole is discussed in the UK report[34]. Whilst not exhaustive, the following contains key policy initiatives relating to climate change, sustainability and building regulations which are specific to Northern Ireland:

- **Everyone's Involved – Sustainable Development Strategy**: the Executive's Sustainable Development Strategy for Northern Ireland, providing a government framework for the sustainability agenda. This should be viewed alongside the new Sustainable Development Strategy Implementation Plan which details the actions to be taken by Government and others in support of achieving the strategic objectives within the Sustainable Development Strategy.
- **Planning Policy Statement (PPS) 21: Sustainable Development in the Countryside;** came into effect on 1st June 2010 and sets out the planning policies for development in the countryside.
- **Building Regulations Legislation.** Building Regulations legislation falls into two distinct categories: Primary Legislation and Secondary Legislation (Statutory Rules)

[32] Comprehensive Spending Review 20th October 2010
[33] Northern Ireland Construction Bulletin. 1st April – 30th June 2010
[34] ConstructionSkills. Sector Skills Assessment for the Construction Sector 2010 – UK Report

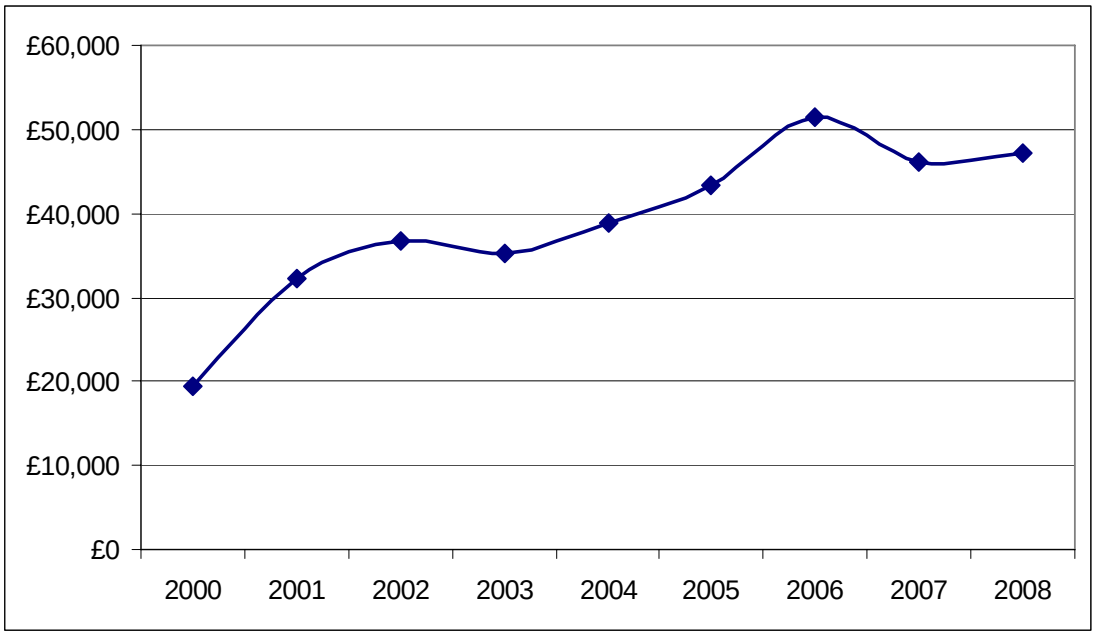
- The primary legislation for building regulations within Northern Ireland is the **Building Regulations (Northern Ireland) Order 1979 (as amended 1990 and 2009)**.
- Statutory Rules for building regulations in Northern Ireland:
- **The Building Regulations (Northern Ireland) 2000**; impose certain mandatory requirements in relation to the construction, alteration or extension of a building and certain services and fittings. Since they came into operation on 1 April 2001 they have been amended by-
- **The Building (Amendment) Regulations (Northern Ireland) 2005**; amended Part E: Fire safety
- **The Building (Amendment) Regulations (Northern Ireland) 2006**; amended Part F: Conservation of fuel and power, Part L: Combustion appliances and fuel storages systems and Part R: Access to and use of buildings
- **The Building (Amendment No.2) Regulations (Northern Ireland) 2006**; further clarified the intent of the preceding amendment
- **The Energy Performance of Buildings (Certificates and Inspections) Regulations (Northern Ireland) 2008**; introducing the requirements for Energy Performance Certificates to be made available to owners/ prospective buyers or tenants when a building is constructed, sold or rented out and that air-conditioning systems are to be regularly inspected.
- **The Building (Amendment) Regulations (Northern Ireland) 2010**; came into operation on 31st March 2010 and amends Part D (Structure) and Part J (solid waste in buildings).

2.2.8 Productivity and Industry Performance

Productivity improvement remains a central tenet in the overall ambition to up-skill the construction workforce, although efforts to improve performance have also focussed on changing the structure and *modus operandi* of the industry.

Between 2000 and 2006 the GVA per employee in Northern Ireland's construction industry increased significantly, following a dip in 2007, the latest figures (2008) show a slight increase on the previous year. This however may have less to do with operational improvement and more to do with the lag on output and structural changes within the workforce resulting from the recession. A common effect of recession is a short-term spurt in productivity. Another factor is the incompleteness of the statistics in respect of industry coverage, increased demand and inflated land prices that have predominated over the period.

Chart 7 - Gross Value Added Per Construction Employee, Northern Ireland: 2000-2008



Source: Northern Ireland Annual Business Inquiry, 2009

2.3 Inter-Sector Comparisons

Inter-sector comparisons show the size of construction's contribution to the economy and also its heavy reliance on labour input compared with others. The following industries were selected as they are manufacturing and production as opposed to service industries; reasonably labour intensive and reasonably traditional.

Table 2 - Sector Comparison of Gross Value Added, Northern Ireland: 2008

Industry	Turnover (£m)	Approx GVA (£m)	GVA/head (£)
Construction	7,235	2,463	47,108
Agriculture, forestry and fishing	91	37	31,423
Mining and quarrying	348	103	46,154
Manufacturing	15,641	4,307	51,723
Electricity, gas, steam and air conditioning supply	1,395	493	246,416
Water supply, sewerage, waste management and remediation activities	416	373	71,825
Transport and storage	2,435	1,080	43,317

Source: Northern Ireland Annual Business Inquiry, March 2009

To the extent that comparisons between industries on purely economic measures are valid, the above table suggests that construction is around the upper quartile in GVA per head for those industries selected, yet overall as an industry it is making almost 70 times the contribution to the economy as Agriculture and Mining.

Summary Box

- The construction industry in Northern Ireland employs 64,000, accounting for 8% of the Northern Ireland workforce, had an output in 2009 of £2.79billion (at constant 2005 prices) and generated £2.46 billion in 2008 of value added - all of which is actually produced from a fairly fragmented sector

- In terms of occupational structure, manual workers dominate, representing 70% of the total workforce, the largest share compared to the rest of the UK. The largest occupational group, representing 16% of the total construction workforce in Northern Ireland, is wood trades.

- Increasing concerns regarding the future of funding for the Northern Ireland Investment Strategy and the recent announcements as part of the Comprehensive Spending Review, are leading to a fairly modest rate of output growth for the construction industry in the Province over the next 5 years.

- Northern Ireland has a significantly different structure to its construction industry than the rest of the UK, with a very small R&M sector. In 2009 it accounted for only 19% of output in the province compared with 41% for the UK as a whole.

- ConstructionSkills' research amongst professional practices has indicated that a fall in fee income has particularly affected firms in Northern Ireland – three quarters (76%) reported a decrease compared to only 6% that had seen fee income increase over the past 12 months. These findings for the UK were 54% and 11% respectively.

- Just over a fifth (22%) of companies from Northern Ireland had expanded into different parts of the market or changed the focus of their work in response to the recession. The most common areas expanded into included smaller jobs (39%), building refurbishment / installation (20%) and expanding the products and services offered (20%).

- Legislation remains a key driver for change across industry sectors as a whole and within the construction sector specifically, and in many respects is the principle driver.

- Productivity improvement remains a central tenet in the overall ambition to up-skill the construction workforce, although efforts to improve performance have also focussed on changing the structure and *modus operandi* of the industry.

3. What have been the recent trends in the supply of skills?

The following section sets out the recent trends in the level and type of skills by focusing on the four key areas of supply relevant to the construction industry, namely education and training, skill levels (using qualifications as a proxy), mobility and migration.

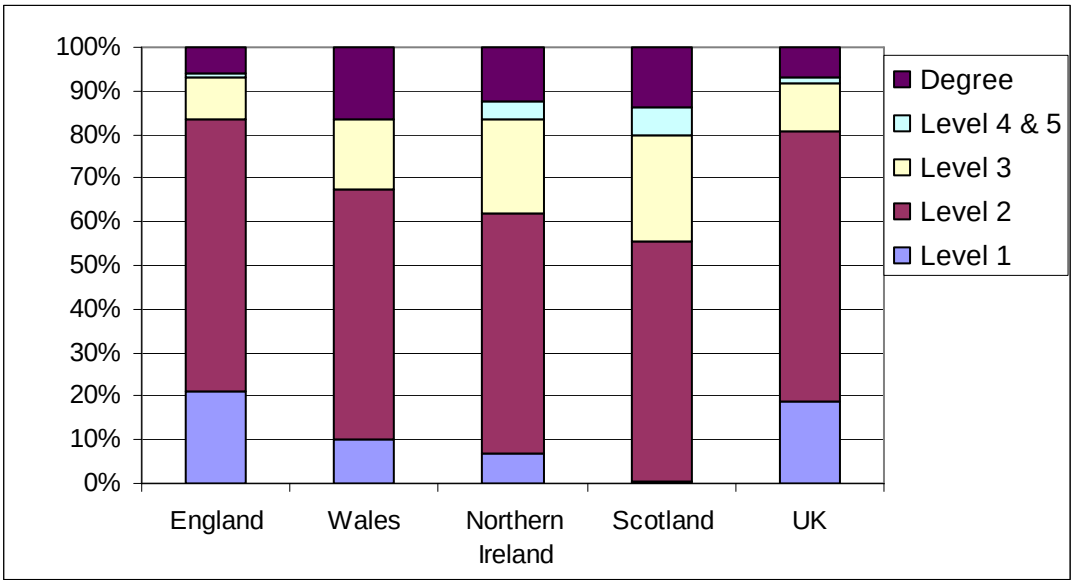
3.1 What has been the level and type of skills entering the labour market?

3.1.1 The contribution of training and education

To provide a robust view on the number of people available to enter the construction industry through accredited[35] training and education, ConstructionSkills has been undertaking a longitudinal project[36] to obtain training supply data across the UK from both further and higher education.

The latest available data providing the training picture in Northern Ireland shows 4,420 construction qualification achievements in 2008/2009. Chart 8 below, shows the share of training by level of qualification across each nation and the overall UK total.

Chart 8 – Achievers of qualifications within construction industry by level of qualification and nation, UK: 2008-2009



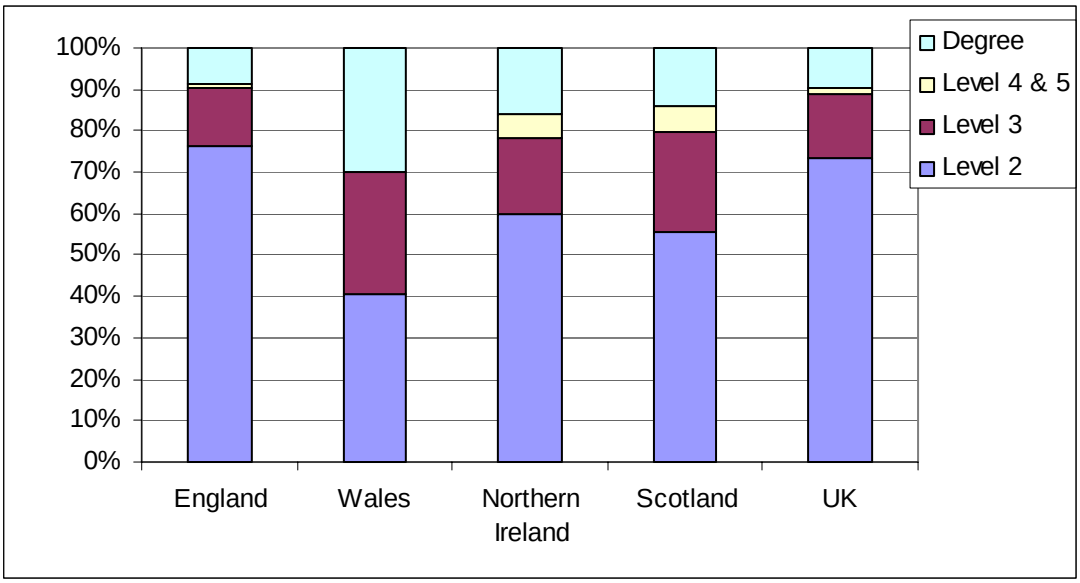
The largest amount of training being undertaken in Northern Ireland was at a level 2 (55%), which was equivalent to the findings across each of the other nations. Compared to the UK, Northern Ireland has a higher share of achievers at Level 3 qualifications and above.

[35] The term 'accredited' in this context refers to officially recognised UK based qualifications
[36] ConstructionSkills Training Supply Project aims to provide a full picture of UK publicly funded training provision across the ConstructionSkills footprint by obtaining robust and reliable datasets from the appropriate organisations

This analysis of training data contains all qualification achievements collected by public funding agencies, and as such Levels 1 to 3 will contain both National Vocational Qualifications (NVQs) and Vocationally Related Qualifications (VRQs). The main difference between these two types of qualifications is that VRQs are essentially delivered through full time further education and therefore they are not perceived by the industry in quite the same way as NVQs which are based around practical application of skills in a work based environment. With this in mind the construction industry tends to use a Vocational Qualification (VQ) Level 2 as the competency benchmark. Therefore the training data needs to be further deflated to show those deemed competent as available to enter the construction industry.

Further analysis of this data excluding all VRQ and Level 1 NVQ qualifications shows 3,410 achievers available to enter the workforce in Northern Ireland. This is shown in Chart 9 by qualification level and nation.

Chart 9 – Achievers of qualifications deemed competent to enter the construction industry by level of qualification and nation, UK: 2008/2009



Therefore 77% of all achievers are considered competent to enter the workforce. This equates to a reduction of 1,010 achievers, of which roughly a third were divided between the NVQ Level 1, VRQ Level 2 and VRQ Level 3.

Although VRQs and Level 1 NVQ's are not considered by the industry to provide the required level of competency they can be regarded as a progression route into the industry.

3.1.2 Apprenticeships

Whilst the construction industry does not tend to regard VRQ training as providing the appropriate skills to enable entry into the workforce; apprenticeships, on the other hand, are considered an important training route. However the recent recession and current fragile recovery has unsurprisingly impacted on apprenticeship training as substantiated by findings from ConstructionSkills 2009 survey on Skills and Training[37].

[37] ConstructionSkills Skills and Training in the Construction Industry, 2009. Within Northern Ireland this entailed a telephone survey with 85 employers and sole traders/self-employed (covering the construction contracting sector as well as professional services firms).

When employers in Northern Ireland that offered Apprenticeships were asked if the recession had had a negative impact on the number of Apprenticeships being taken on more than two-fifths (43%) admitted that the number of Apprentices recruited by their establishment had fallen as a result.

Further investigation via ConstructionSkills' Employer Panel[38] found that over two-thirds of companies from Northern Ireland (69%) had cut back on the planned recruitment of apprentices because of the recession, considerably higher than across the UK as a whole (30%). Given the scale of cut backs in the recruitment of apprentices, it is not surprising that nearly three-quarters of employers in Northern Ireland (72%) felt that there is an over-supply of people wanting to become apprentices (above the UK average of 64%). Over half (56%) of the companies identifying an oversupply of apprentices feel this affects particular occupations, most commonly electricians carpenters / joiners, bricklayers, plumbers and Architects.

A "snap shot" of entrants onto construction apprenticeships show that 1,230 starts were recorded in the academic year 2010/2011; the majority of these (76%)[39] are being undertaken at a further education college. As the data below shows, the largest share of apprenticeship enrolments were in occupations which were considered to have an oversupply, as mentioned above.

Table 3 - Apprenticeship Starts in Northern Ireland: 2010/2011

Occupation	Starts
Carpenters and Joiners	**557**
Plumbers, Heating & Ventilating Engineers	**313**
Bricklayers, Masons	**202**
Plasterers	**58**
Painters and Decorators	**50**
Floorers and Wall Tilers	**24**
Construction Operatives	**19**
Welding Trades	**13**
Construction Trades nec*	**4**
Total	**1,230**

* not elsewhere classified
Source: DELNI, snapshot taken 11 November 2010

Whilst there is concern amongst the industry that particular trades are oversubscribed, many of the skills acquired through these courses can be adapted to meet the needs of more specialist sectors and so qualified apprentices can find employment in these areas. Additionally many students do not complete their qualification, as achievement rate data highlights.

Achievement rates at Level 2 vary between 44% and 59%. At Level 3, achievement rates are even poorer at 23% to 27%. Clearly there are major issues in terms of retention and progression of apprentices, however only anecdotal evidence exists in terms of the reasons for this. Typical reasons are the high theoretical content of training programmes, associated issues around essential skills, the marginalised practical content of courses because of other framework requirements, NVQs being undervalued by employers and young people and not an absolute requirement for employment, the cost to the employer and the potential loss of earnings for the apprentice when on day release[40].

[38] ConstructionSkills Employer Attitudes and Motivations to Learning and Training (Wave 10), 2010, Employer Panel Consultation with 102 employers and sole traders across construction industry in Northern Ireland (unpublished)
[39] Department for Employment and Learning NI
[40] CITB-ConstructionSkills Northern Ireland, Sector Skills Agreement for the Construction Industry in Northern Ireland 2010-2014

In September 2009, the Department for Employment and Learning introduced a new intervention entitled Programme-Led Apprenticeships. This intervention will run parallel to ApprenticeshipsNI and replaces the suspended Pre-Apprenticeship programme of Training for Success (existing participants were transferred to the new scheme). Programme-Led Apprenticeships are designed to assist those wishing to enter an apprenticeship but who are unable to get employment due to the current economic climate to complete their training. Grave concerns have been voiced by Sector Skills Councils about the potential impact this may have on employed apprenticeships, as employers are likely to choose the unemployed option. This has been reinforced by the latest statistics for NI which show that the majority of the 2009 and 2010 intake onto apprenticeship programmes in NI are following a Programme-Led Apprenticeship.

3.1.3 Skill Levels in the Construction Industry

The following table shows the highest qualification level achieved by the construction industry workforce in each geographical area across the UK and compares the Northern Ireland construction industry workforce to the workforce across all industries in Northern Ireland.

Table 4 – Construction Industry Workforce Qualifications v All Industries in Northern Ireland: 2010

	Construction Industry					All Industries (NI)
	UK	England	Wales	Scotland	Northern Ireland	
NVQ level 4 & above	28%	28%	29%	35%	17%	33%
NVQ level 3	17%	17%	19%	18%	17%	15%
Trade Apprenticeships	13%	12%	9%	18%	26%	7%
NVQ level 2	13%	13%	14%	9%	13%	15%
Below NVQ level 2	11%	12%	10%	6%	*6%*	10%
Other qualifications	9%	10%	9%	7%	*4%*	5%
No qualifications	8%	8%	11%	7%	17%	14%
	100%	100%	100%	100%	100%	100%

Note: Figures in italics are based on small bases sizes, and caution is required when interpreting these.
Source: Office for National Statistics, Labour Force Survey. Based on SIC2007.

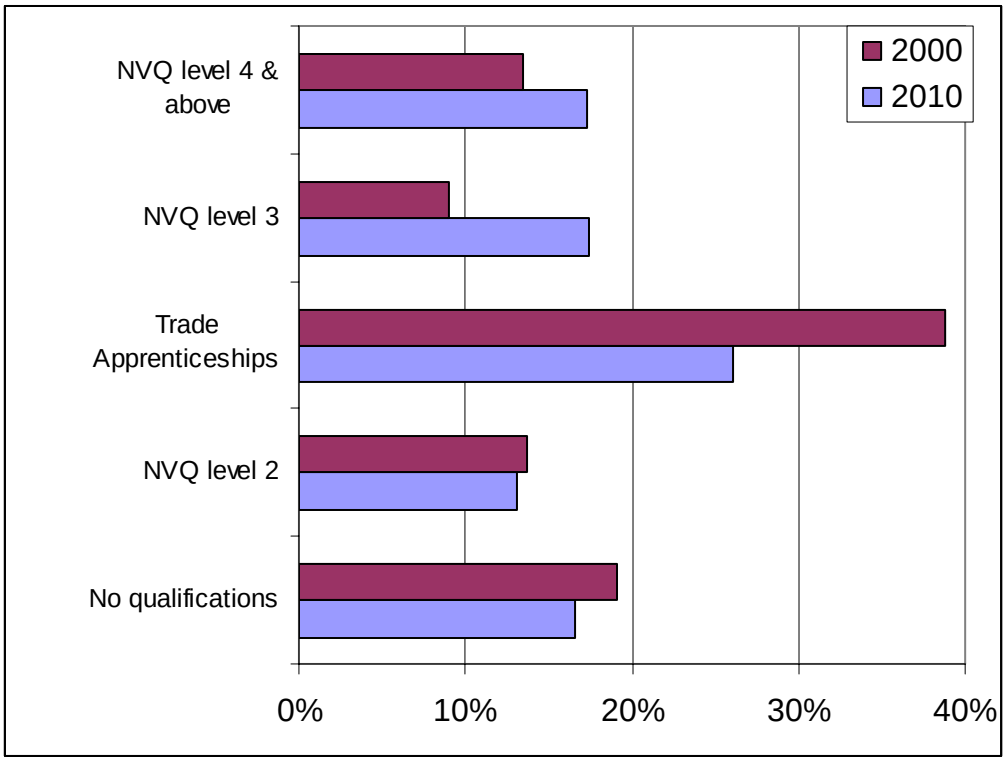
From the table it is evident that:

- Apprentice training is substantially more popular in Northern Ireland than the rest of the UK.
- Northern Ireland has the smaller share of workers qualified to S/NVQ level 4 and above.
- Northern Ireland has the largest proportion of workers with no qualifications.

Compared to all industries in Northern Ireland the construction workforce has a significantly higher proportion trained as an Apprentice (26% v 7%), but nearly half the share trained to Level 4 and above (17% v 33%).

There have been quite dramatic changes to the qualifications of the construction workforce in Northern Ireland over the past decade as the chart below demonstrates.

Chart 10 - Qualifications of the Construction Workforce, Northern Ireland: 2000 v 2010



Source: Office for National Statistics, Labour Force Survey

The improvements in the overall skills profile of the industry are encouraging and are progress towards *The Leitch Ambition*[41]. Leitch recommends that by 2020 - 40% of the workforce should be operating at level 4 and above; 90% should be qualified to at least level 2; the balance of intermediate skills should be shifted towards level 3.

The main improvements in the skill levels of the construction industry in Northern Ireland have been the increase in qualifications at intermediate (Level 3) and higher (Level 4) and above. Qualifications obtained at a Level 3 and above have increased from 22% to 35% over the past ten years. In terms of absolute numbers the figure has nearly doubled, increasing by 78%. This increase is quite significant when set against the increase in the workforce (12%) over the same timeframe. However, there has been a large decrease in the share of the workforce with an Apprenticeship, although in absolute terms the numbers have only decreased by 13% and as shown earlier they are

[41] Leitch Review of Skills, Prosperity for all in the global economy – world class skills. December 2006

still the most popular qualification in Northern Ireland's construction workforce. These changes could be attributed to the retirement of workers who had qualified via a traditional training route (Apprenticeships) in conjunction with improvements in the qualifications held by new entrants.

Further analysis of the skill levels of the provinces construction workforce shows the differences between manual and non-manual workers.

Table 5 – Construction Industry Workforce Qualifications in Northern Ireland by Non-Manual and Manual Occupations: 2010

	Non-manual	Manual
NVQ level 4 & above	45%	6%
NVQ level 3	12%	20%
Trade Apprenticeships	8%	34%
NVQ level 2	25%	8%
No qualifications	3%	22%

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

As would be expected the most popular qualification for workers in non-manual occupations is a qualification at Level 4 and above, with nearly half being educated to this level, while a third of the manual workforce have an Apprenticeship. However, the manual workers are far more likely to not have any qualifications than those employed in non-manual occupations.

3.1.4 Occupational Mobility

Mobility within the industry, in particular, occupational mobility is important to consider in the context of trends in the supply of skills, as it potentially leaves additional gaps which new entrants are required to fill.

A survey of construction industry mobility[42] found that two-thirds (66%) of Northern Ireland workers said they had always worked in the same occupational areas as their current job. Where workers had changed trades, they were most likely to have switched from the relatively unskilled position of labourer/general operative, indicating that many workers follow the pattern of starting out in the industry in unskilled positions before progressing to more skilled work.

3.1.5 Migration

Finally, the flow of workers from overseas needs to be considered in terms of the level and type of skills they are bringing to the construction industry in Northern Ireland.

Whilst it is extremely difficult to get a full picture of the extent of these migratory flows we can draw some tentative conclusions about migrant workers in construction, their countries of origin, and the kinds of skills they are bringing with them.

ConstructionSkills research suggests that in June 2009, 12% of employers in Northern Ireland said they employed or had employed in the last six months a worker who was not a UK citizen or passport holder. Whilst this is higher than in December 2008 (10%), it is lower than the findings in June 2008 and November 2007 (20% and 14% respectively). The likelihood of employing non-UK workers was higher in Professional Services firms and larger firms – rising from 5% of small firms (2-9 staff) to 82% of large firms (100 or more staff)[43] .

[42] ConstructionSkills and Foras Áiseanna Saothair (FÁS). Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007. Face to face interviews with 263 with site based workers in Northern Ireland

[43] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Waves 6,7,8 and 9), 2007-2009 (unpublished)

For the majority (43%) of firms there was no particular reason for employing non-UK workers. When there was a motive it was usually as a response to skills shortages (29%); non-UK workers having the right skills for the job (14%) and tending to be better motivated (12%).

Attitudes towards employing non-UK workers changed significantly between 2008 and 2009. There has been a large reduction in employers expecting an increase in non-UK workers (down from 59% in June 2008, to 4% in August 2009). Additionally employers who felt that non-UK workers are more highly skilled has halved since December 2008, from 18% to 9%. However, there has been an increase in the proportion of employers who felt that non-UK workers were more motivated (from 42% to 66%).

It is difficult to predict the future flows of migrant workers as there are many influencing factors. However, it is anticipated that increasing globalisation of goods and services and the further integration of emerging economies will increase the supply of low skilled workers and overseas production activities will increase the competitive pressures on firms and the indigenous workforce.

Summary Box

- There were 4,420 construction qualification achievements overall in 2008/2009, of which 77% were considered competent to enter the workforce.
- More than two-fifths of employers in Northern Ireland that offered Apprenticeships admitted that the recession had had a negative impact on the number of Apprenticeships being taken on.
- 1,240 construction apprenticeship starts were recorded in the academic year 2010/2011.
- Compared to all industries in Northern Ireland the construction workforce has a significantly higher proportion trained as an Apprentice (28% v 8%).
- There have been quite dramatic changes to the qualifications of the construction workforce over the past decade, both proportionately and in terms of absolute numbers there has been a significant increase in higher level qualifications.
- Two-thirds of workers in Northern Ireland's construction industry said they had always worked in the same occupational areas as their current job. Where workers had changed trades, they were most likely to have switched from the relatively unskilled position of labourer/general operative.
- It is difficult to predict the future flows of migrant workers as there are many influencing factors. However, it is anticipated that increasing globalisation of goods and services and the further integration of emerging economies will increase the supply of low skilled workers and overseas production activities will increase the competitive pressures on firms and the indigenous workforce.

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

3.2.1 Workforce Training and Development

We have seen above how the UK construction industry's stock of skills (as defined by qualifications) is changing, we now examine other available measures of skills development, notably training activity and participation in training.

Central to the enhancement of skills within employers' workforces is the provision of training and development for staff. This section examines the extent and nature of training and development activity across the construction industry in Northern Ireland during the 12 months to July 2009 as reported in ConstructionSkills' Skills and Training survey[44] which was commissioned to provide a representative survey of the UK construction industry, ensuring full coverage of the workforce by including the self-employed. Currently no national survey is available which provides data on the skills and training issues affecting the whole construction industry.

In order to investigate the extent and nature of training and development activity, the following 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 time'), the degree of training leading to qualifications, and the types of training undertaken. We also look at the impact of the recession on training activity. Figures on the numbers of staff trained cover both direct employees as well as self-employed and other staff working for the employer.

Two thirds (68%) of establishments across the construction industry in Northern Ireland had funded or arranged training or development for staff during the 12 months to July 2009. This is a much higher share than across the UK as a whole (51%) and is the largest proportion across each of the nations/regions (which vary from 40% to 64%).

Results indicate:-

- Overall more than half of employers in Northern Ireland deliver some off-the-job training (53%), while 37% provide some on-the-job training – respectively equivalent to just over three-quarters (79%) and a half (55%) of those that train.

- Employers reported providing training for approximately 26,500 workers (both direct employees and self-employed / indirect labour).

- The proportion of the workforce trained was relatively low in Northern Ireland (34%) when compared across the UK.

- Establishments had provided an average of 4 days off-the-job training and 7 days on-the-job training per employee.

Whilst the extent of training is considerable it is important to measure the extent to which it will feed into increased qualification attainment. Approximately one in four (39%) employers that train had provided training intended to lead to a nationally recognised qualification. In volume terms, approximately 6,773 staff were training towards a qualification.

[44] ConstructionSkills Skills and Training in the Construction Industry, 2009. Within Northern Ireland this entailed a telephone survey with 85 employers and sole traders/self-employed (covering the construction contracting sector as well as professional services firms).

Employers that train were asked whether they had used a range of types of training provider and training approaches.

Private providers and consultants are the most commonly used type of provider (56%) followed by TASC (Training and Assessment Services for Construction, CITB-ConstructionSkills Northern Ireland's direct training division) (45%). The results in Northern Ireland differ quite significantly from the rest of the UK, as follows;

- High use of TASC (Training and Assessment Services for Construction, CITB-ConstructionSkills Northern Ireland's direct training division) (45% of those training) when compared with use of the National Construction College (NCC) in Great Britain among the construction contracting sector (6%)

- Use of FE colleges was high in Northern Ireland (37% of those that train), and lowest in Scotland and the East Midlands (9% and 6% respectively).

- On-the-job demonstration by experienced workers was low in Northern Ireland (41%), compared to the other nations across the UK, where it ranged from 65% to 74%.

- Employers in Northern Ireland were the least likely to use training provided by manufacturers or suppliers than across the UK (20% v 44% respectively).

3.2.2 The Impact of the Recession on Training Activity

Recent (October 2010) consultation with employers in Northern Ireland via ConstructionSkills Employer Panel[45] found that the majority of employers (68%) had not made any changes to the training they provided due to the economic downturn, with just over half (53%) admitting they had reduced training.

For those who had reduced training, just a third (30%) had trained fewer staff and given each trainee less training, with job specific training being the most likely to be cut back on.

For all employers who had changed the way they deliver training, two-thirds (66%) had starting carrying out more in-house training.

These findings suggest that the recent recession has not severely impacted on employers' commitment to training their workforce, but changes have been made to how this training is delivered.

[45] ConstructionSkills Employer Attitudes and Motivations to Learning and Training (Wave 10), 2010, Employer Panel Consultation with 1,511 employers and sole traders across UK construction industry (unpublished)

Summary Box

- Two-thirds of establishments across the construction industry in Northern Ireland had funded or arranged training or development for staff during the 12 months to July 2009. This is a much higher share than across the UK as a whole (51%) and is the largest proportion across each of the nations/regions (which vary from 40% to 64%).
- Overall more than half of employers deliver some off-the-job training (53%) while 37% provide some on-the-job training .
- Employers reported providing training for approximately 26,656 workers.
- Establishments had provided an average of 4 days off-the-job training and 7 days on-the-job training per employee.
- One in four employers that train (39%) had provided training intended to lead to a nationally recognised qualification.
- High use of TASC (Training and Assessment Services for Construction, CITB-ConstructionSkills Northern Ireland's direct training division) (45% of those training) when compared with use of the National Construction College in Great Britain among the construction contracting sector (6%).
- The recent recession has not severely impacted on employers' commitment to training their workforce, but changes have been made to how this training is delivered.

4. Current Mismatches between Demand and Supply for Skills

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

4.1 Skill Shortages

To understand the context of skill shortages in Northern Ireland's construction industry, it is imperative to look at the recruitment activity of employers. This sub-section utilises the findings from construction employers in Northern Ireland as reported in the ConstructionSkills' Skills and Training survey in 2009[46]. This survey was commissioned to provide a representative view of the UK construction industry, ensuring full coverage of the workforce including the self-employed.

Employers across Northern Ireland were asked whether over the last 12 months (July 2008 to July 2009) they had had shortages of skilled workers:

- Only 6% felt that there had been times when they lacked the number of skilled workers they required;
- A third felt that they had been operating at around full capacity given the number of skilled staff they employed;
- Just under two-thirds (61%) had not had enough work for their workforce.

These results differ quite significantly from the UK average, and indicate that Northern Ireland has been particularly affected by the recession in terms of employers being more likely than average to report insufficient levels of work for their workforce for most of the previous 12 months (UK=33%), while employers in Northern Ireland were less likely to say they were operating at full capacity (UK=52%). However, where the picture remains consistent across the UK is in regard to a lack of skilled workers. Ranging from 6% to 11% across the UK nations, implying that a lack of skilled workers is currently not considered a constraint for employers.

These findings have been corroborated with evidence from ConstructionSkills' recent consultation with employers as part of the Employer Panel[47]. Only 1% of employers in Northern Ireland reported finding suitably skilled staff as a key business challenge compared to nearly two-thirds (62%) who felt their biggest issue was the need to increase sales.

The Skills and Training survey reported just over a quarter of all employers in Northern Ireland (27%) had *attempted* to recruit skilled staff in the last 12 months, lower than the UK average (36%). While generally speaking in each geographic area approximately the same proportion had attempted to recruit skilled indirect labour as skilled direct employees, in Northern Ireland this was not the case. Very few had attempted to recruit

[46] ConstructionSkills Skills and Training in the Construction Industry, 2009. A telephone survey of 1,046 employers and 156 sole traders/self-employed operating in the UK construction sector, including 85 interviews in NI (covering the construction contracting sector as well as professional services firms).
[47] ConstructionSkills Employer Attitudes and Motivations to Learning and Training (Wave 10), 2010, Employer Panel Consultation with 102 employers and sole traders in the NI construction industry and 1,511 interviews across the UK. (unpublished)

skilled direct labour (5%) compared with almost a quarter (23%) attempting to recruit indirect skilled labour such as the self-employed.

A fifth of employers trying to recruit skilled staff reported some of these vacancies as being hard-to-fill, equivalent to 5% of all employers experiencing recruitment difficulties for skilled staff in the previous 12 months. These findings are comparable to those from The Northern Ireland Skills Monitoring Survey (2008)[48] which reported difficult to fill vacancies as 17% of all vacancies in the construction industry – considerably less than the national average (29%).

4.2 Skill Gaps

The previous section looked at the extent and nature of recruitment difficulties employers were experiencing when taking on skilled staff. This section turns from skills issues when recruiting to skill gaps among the directly employed workforce. Skill gaps are said to exist when an employee or employees are felt by their employer not to be fully proficient at their job. Clearly this potentially covers a wide range of ability from someone who is almost fully proficient to someone who needs to gain a lot more skills and experience to get to this level.

Overall one in ten employers in Northern Ireland (10%) have staff lacking proficiency, directly comparable to the results across the UK[49].

The following table shows the proportion of the directly employed workforce lacking skills by region/country. As this highlights direct employees in Northern Ireland described as not being fully proficient were below the national average (3.4% compared to 4.0%)

Table 6 – The proportion of the directly employed workforce lacking skills by region/country

	%
North West	7.0
Wales	6.7
East of England	5.6
Yorkshire and Humberside	4.5
UK	4.0
North East	3.8
South East	3.5
Northern Ireland	3.4
Scotland	3.3
London	3.2
East Midlands	2.7
West Midlands	2.5
South West	2.5

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

[48] Department for Employment and Learning. The Northern Ireland Skills Monitoring Survey 2008, November 2009

[49] ConstructionSkills Skills and Training in the Construction Industry, 2009

4.2.1 Upskilling the Workforce

Two-thirds of employers[50] (67%) in NI felt there were factors likely to lead to changing skills or knowledge needs in the coming 12 months. The factor considered to have the greatest impact on future skill needs was new legislation or regulations (47%). In addition 37% thought the recession would affect their skill needs.

Employers indicating that there would be factors affecting their skill needs over the next 12 months were asked which single occupation they felt would be most affected by these changes. Managers are the single most likely occupation to be affected by the need to upskill in the coming 12 months; however this at least in part results from the fact that a very large proportion of construction employers have a manager.

4.2.2 Management and Leadership Skills

In the management and supervisory training requirements survey[51] employers were read a list of potential skill areas where there may be a gap between the skills the business needs and the skills of the existing management team and all employers recognised that some such gaps exist in their management team. Most common are gaps relating to understanding and keeping up to date on legislation, covering Health and Safety, employment and environmental legislation but also understanding of contracts. Just under two in five of all employers say these are areas where they feel skills and understanding need developing.

Also relatively common, and experienced by around a third of employers, are managerial / supervisory skill gaps relating to IT, financial understanding, risk management, identifying new markets and / or clients and keeping up to date with the latest products and techniques in the industry. These each affect from a quarter to a third of all employers.

Relatively few employers feel there are communication skill gaps (11%) or gaps relating to effective delegation (15%). Similarly relatively few feel they lack skills relating to developing sustainable practices or for managing suppliers and sub-contractors, or their clients (each mentioned by 15% of employers).

The most prevalent skills gaps in terms of the proportion of supervisors and managers affected are: keeping up to date with Health and Safety legislation; legal understanding of contracts; keeping up to date on employment legislation; keeping up to date on environmental legislation; the IT skills of managers and supervisors; and team building and getting staff to share the same goals. Each of these is felt to be lacking or needing development in a fifth to just over a quarter of all managers and supervisors.

When asked what they considered to be the key skills areas that need improving to develop and grow the business in the coming years, the key priority management skill areas relate very much to keeping up to date and improving knowledge of laws and regulations, whether to do with health and safety, environmental or employment legislation, or understanding of contracts. As many as a quarter of employers see improving and keeping up to date on health and safety and environmental legislation and regulations as a priority area for their business. All factors related to legal understanding are more likely to be seen as priorities by contractors than professional service firms, particularly in relation to Health and Safety and environmental legislation.

Other important priorities are improving risk management understanding and practices, estimating project costs accurately, keeping up to date on latest products and techniques in the sector and ensuring that managers and supervisors have the skills to

[50] ConstructionSkills. Skills and Training in the Construction Industry, 2009
[51] ConstructionSkills Northern Ireland. Management and Supervisory Training Requirements of the Construction Industry in Northern Ireland, 2007

ensure project work is carried out safely. These are each mentioned as a priority by around one in six employers.

Large employers with 100 or more staff have different priorities to smaller firms, and are more likely to mention the following skill areas as important for developing their business: team building (52%), managing time effectively and prioritisation of tasks (45%), maximising productivity (42%), managing suppliers or sub-contractors to ensure that they deliver what is expected (45%), communicating effectively (36%) and ensuring projects run to cost (36%).

More recently extensive consultation with employers via CITB-ConstructionSkills Northern Ireland Employer Engagement Seminars and through Business Improvement Seminars that have been hosted in partnership with the Federation of Master Builders (FMB), has found evidence that for construction employers in Northern Ireland successful tendering and winning contracts has become more of a priority training need in the last year or two as a result of the downturn.

4.3 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, firms have also had to make redundancies.

Recent research[52] found that a just over a third of firms (37%) had to make permanent staff redundant and a similar proportion (39%) had to make self-employed or temporary staff redundant due to the economic downturn in the past 12 months. Whilst it is not possible to know whether these workers have been re-employed within the industry, it would seem unlikely as eight in ten employers (82%) admitted they had had to cut costs/reduce their overheads. Therefore it can be assumed that those made redundant had either moved into another industry or they were currently unemployed.

It would appear that unemployment was a far more likely scenario based on the latest official claimant count data[53]. In September 2010 just under 13,000 people in Northern Ireland were recorded as claiming unemployment related benefits whose last occupation was within the construction industry – a figure almost identical to the claimant count in September 2009.

Further evidence is provided in the table below which shows the current unemployment rate for the construction industry and compares these findings to the overall industry rate across the UK nations.

Table 7 - The unemployment rate in the Construction Industry and All Industries, by nation (UK: Spring 2010).

	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. SIC2007

[52] ConstructionSkills Employer Attitudes and Motivations to Learning and Training (Wave 10), 2010, Employer Panel Consultation with 102 employers and sole traders in the NI construction industry and 1,511 interviews across the UK. (unpublished)

[53] Department of Enterprise Trade and Investment Northern Ireland

As the data highlights the construction industry in Northern Ireland continues to be significantly affected by the economic downturn, with the unemployment rate considerably higher than the national figure (15.1% v 8.8%) and nearly three times as high as the rate for all industries within the province.

The impact of the recession across Northern Ireland's 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

- Just under two-thirds (61%) of employers reported insufficient levels of work for their workforce for most of the previous 12 months compared to only 6% who felt that there had been times when they lacked the number of skilled workers they required.
- Just over a quarter of all employers (27%) had attempted to recruit skilled staff in the last 12 months, lower than the UK average (36%).
- A fifth of employers trying to recruit skilled staff reported some of these vacancies as being hard-to-fill.
- One in ten employers (10%) have staff lacking proficiency, directly comparable to the results across the UK.
- The most common skill gaps in management related to understanding and keeping up to date on legislation, covering Health and Safety, employment and environmental legislation but also understanding of contracts. Just under two in five of all employers say these are areas where they feel skills and understanding need developing.
- The current unemployment rate across the construction industry in Northern Ireland is 15.1% - nearly three times as high as the rate for all industries within the province.

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

This section examines the evidence for what are expected to be the main drivers for skills change in the Northern Ireland construction industry, and what implications these may have for the types of skills that firms will need to operate successfully.

5.1 PESTLE Analysis

A standard way of grouping these emerging issues is under the broad headings of Political, Economic, Social, Technological, Legal, and Environmental (PESTLE).

The table below offers a PESTLE analysis summarising the drivers for skills change. Clearly a detailed examination of them all would warrant a lengthy report in its own right, but the key drivers, along with the evidence for each of them, will be examined here.

5.1 PESTLE Analysis - Northern Ireland (NI) and UK

Political	**Social**	**Legal – Legislation**
➢ National Policy Statements, e.g. Energy. ➢ Housing Policy. ➢ Skills White Papers (Success Through Skills 2). ➢ Targeted funding. ➢ Education reform e.g. NVQ – QCF. ➢ Immigration. ➢ Migration (brain drain). ➢ Devolved policies. ➢ Employment initiatives ➢ Energy security	➢ Rising unemployment. ➢ Demographics – ageing workforce. ➢ Demographics – potential workforce. ➢ Image of construction industry. ➢ Housing shortage. ➢ Skills of workforce, compared to UK, ROI and overseas. ➢ Migration	➢ Health & Safety legislation. ➢ Banking legislation – impact on lending, credit insurance, private finance. ➢ Tax changes – CIS and self employed workers in construction. ➢ European legislation.
Economic	**Technological**	**Environmental**
➢ Comprehensive Spending Review – effect on public finance and ability of governments to invest in construction. ➢ Amount of Investment Strategy delivered. ➢ Availability of private finance. ➢ Government targets for fiscal stimulus. ➢ Energy prices. ➢ Carbon trading. ➢ Double Dip recession. ➢ Regional economic factors ➢ Impact of ROI recession ➢ ROI Government Spending Cuts.	➢ Modern methods of construction. ➢ Energy infrastructure. ➢ Low – Zero Carbon technology. ➢ Offsite manufacture. ➢ Intelligent buildings. ➢ Whole life Construction.	➢ Zero carbon o Infrastructure o New housing o Retrofitting ➢ Green jobs. ➢ Code for sustainable houses. ➢ Building Research Establishment Environmental Assessment Method. ➢ Climate change. ➢ Waste (e.g. 75% of construction, demolition and excavation wastes recycled/reused by 2020) ➢ 12% of energy produced by indigenous renewables by 2012

As can be seen there is considerable overlap between several of the sections in the table, for example environmental initiatives will be driven both by rising energy prices (economic), technological breakthroughs (technology), and by Government initiatives (political and legal). Where such overlaps occur it could be said that the drivers, by reinforcing one another, will have the greatest impact.

5.2 Short & medium term skills drivers - macroeconomic Indicators

By far the biggest impact upon construction will be felt from fluctuations in the wider economy, and the ongoing effects of the recent recession.

While the whole of the UK is going to be subject to public expenditure cuts, the province is particularly vulnerable to the affects of these, particularly with an estimated £9.7bn of construction work originally due to be delivered by the Northern Ireland Investment Strategy between 2012 and 2018. Indeed part of the recent announcements in terms of the Comprehensive Spending Review indicated a 37% cut in the capital expenditure budget for NI over the period of the Review and further detail is expected shortly in terms of how these cuts will affect the Investment Strategy for NI.

Construction employment in Northern Ireland declined by 5.6% in 2009 according to revised LFS data but is expected to return to growth in the province in 2011, a year earlier than for the UK as a whole. This more positive profile for the future is due in large part to the fact that Northern Ireland had already experienced a significant fall in 2008 (-7.6%), while employment in the UK continued to grow (0.9%).

The province's total peak to trough fall in employment is predicted to be around 14%, however, it must be recognised that the Labour Force Survey is to a certain extent underestimating the effects of the recession on unemployment as other ONS data[54] suggests that while employee jobs in construction fell by 6% last year total hours worked fell by 9%. This supports anecdotal evidence from employers on the Construction Skills Network Observatory in Northern Ireland that there has been a substantial increase in short-time working and thus higher than normal levels of 'underemployment'.

Over the five year period to 2015, employment is forecast to grow by around 5.8%. Despite this slow growth, there is still a need for new entrants to the industry, in particular to accommodate the large number of workers who are set to leave the industry in the next 10 years through retirement.

The construction industry in Northern Ireland derives comparatively more work from new build and particularly that driven by the public sector than the UK as a whole, thus the details of public expenditure cuts will be of key importance to several sectors and may affect Northern Ireland disproportionately.

However, it is also generally recognised that there will need to be continued investment in future construction projects. Construction forms a significant 'enabler' to other industries and is fundamental to all aspects of daily life, from transport to medical care. Northern Ireland requires investment to have an efficient transport infrastructure, decent homes and a solution to its energy requirements that will meet legislative standards and its population.

This will subsequently have a considerable bearing on the demand for certain types of skills. This is important because while certain sectors within construction have a very similar skills mix (housing, commercial and some repair and maintenance), others have unique skills requirements (large infrastructure and energy projects).
Following the recession there has been a climate of fiscal constraint, led by tighter lending regulations and a more risk adverse approach to financing from the banking sector - especially concerning technologies that are not tried and tested, in the sense that they have not been widely adopted by the consumer. As will be discussed later in this section, so called Modern Methods of Construction which utilise these new technologies are expected to drive long term skills change in some sectors of the

[54] The Annual Survey of Hours and Earnings (ASHE) 2009

industry, in the short to medium terms however this commercial factor will act as a brake on their adoption, at least amongst small businesses.

So what are the implications of the continued economic uncertainty for skills in the industry? In 2007 the research agency IFF undertook a survey of construction Professional Services[55], examining how they were coping with the recession. One particular conclusion was pertinent for the whole industry and that was that the skills required for surviving difficult economic conditions are different to those needed when the economy is performing well.

Whereas in a strong economy there is some benefit to be gained from being a specialist in a particular field, commanding higher prices for the greater knowledge and skills that this implies, in more difficult economic times when different parts of the industry may experience markedly contrasting fortunes, there is merit in operating across a range of sub-sectors. The advantage this brings is that a downturn in one poorly performing area can be offset by relatively better performance in another, enabling a more steady work and cash flow.

The same principle operates at the level of the individual employee. There is increasing evidence[56] that firms are training operatives to be proficient in a number of trades so that fewer workers are required to complete a given project. While this is a short term response to the present economic circumstances, it is expected that the increased cost effectiveness and productivity will ensure that it becomes a more permanent feature within the main manual trades (bricklaying, carpentry & joinery, and plastering) in the construction workforce.

As the construction industry begins to emerge from recession it will face a different set of strategic challenges which it will need to consider if it is to compete effectively in a global arena. Against this backdrop firms will also need to consider, and plan for, how they will train the next generation of construction workers. There is a real risk that lessons will not have been learnt following the recession of the 1990's, and in the medium term, as the industry begins to recover, there will be a shortage of skilled staff. If this is not addressed by increasing training and apprenticeships (and it can take up to three years to train an apprentice, longer still until they are able to work unsupervised and fully proficiently on site), then it is likely that we will see a return of the skills shortages that marked the early years of the 21st Century.

5.3 Long term skills drivers

In the longer term the legislation to tackle climate change and energy security are all interacting to create the development of a potential new economy which will have an element based on what is being labelled as 'green jobs'.

5.3.1 Legislation and Policy

The initiatives and legislation to incentivise this transformation are outlined in Table 8 below. Targets set for the UK typically override all others; however the Northern Ireland Executive has outlined several strategies to meet the specified targets.

[55] ConstructionSkills and Construction Industry Council, Impact of the Recession on Construction Professionals 2009. Thirty in-depth interviews with professional practices were undertaken in August and September 2009 followed by larger telephone survey of 301 firms undertaken in October 2009.

[56] Employer feedback from Construction Skills Network Observatories. The observatories are structured meetings including a range of employers, stakeholders, and experts from the construction industry discussing topics around skills supply and demand in the construction industry.

Table 8 – Main UK government strategies for addressing energy efficiency

Strategies	Details
Building Regulations (NI Specific)	The primary legislation for building regulations within Northern Ireland is the Building Regulations (Northern Ireland) Order 1979 (as amended 1990 and 2009). In addition The Energy Performance of Buildings Regulations (Northern Ireland) 2008; requires Energy Performance Certificates to be made available to owners/ prospective buyers or tenants when a building is constructed, sold or rented out.
Energy Performance Certificates (EPC)	Part of the Home Information Packs (HIPs) and although the requirement for HIPs has been removed, EPC is still required for properties to be sold or rented.
Housing Quality Standards	Aim by 2010 that 95% of social housing will be warm, weatherproof and with modern facilities.
Warm Front	Providing insulation and heating improvements
Carbon Emissions Reduction Target (CERT)	Extended to December 2012. Initiative means that 68% of the work must be met through professionally installed loft, cavity and solid wall insulation with the inclusion of DIY. Now 80% of the obligation will be met through improved insulation and 15% of homes helped will be in the lowest income households.
Community Energy Saving Programme (CESP)	Originally introduced under the Home Energy Management strategy to replace the obligation on energy suppliers when CERT ended.
Feed in Tariffs (FITs)	April 2010. Generate income for each kW of energy you use in property plus additional payment for each kW generated and sold back to the National Grid

As well as the above legislation there are specific initiatives for Northern Ireland. Everyone's Involved – Sustainable Development Strategy which is the Executive's strategy to provide Northern Ireland with a government framework for the sustainability agenda. This should be viewed alongside the new Sustainable Development Strategy Implementation Plan which details the actions to be taken by Government and others in support of achieving the strategic objectives within the Sustainable Development Strategy. It underpins the Investment Strategy for Northern Ireland with excellence in construction programmes that integrate Sustainable Development principles. It aims to ensure that public sector housing and public properties are constructed or refurbished to maximise sustainability and flexibility of use.

Current work towards achieving these targets creates a significant opportunity for occupations likely to be involved in the creation, installation and maintenance of products and services – e.g. designers, specifiers, building services engineers and planners.

Success through Skills 2 is the new Skills Strategy for NI and provides an overarching framework for the development of skills in NI by looking at the current skills base, examining the skills needed in the future to grow the NI economy and highlighting the areas for action. Its vision is one of achieving a skilled Northern Ireland workforce by 2015. A key target of Success through Skills 2 is to increase the skills and qualifications of the Northern Ireland workforce, (including the Essential Skills of numeracy, literacy and ICT) and to encourage higher value-added jobs and enhancements to productivity.

A further key target within Success through Skills 2 is the need to enhance management and leadership skills within the province and to address the under-representation of graduates in key sectors in the economy, including construction, which has resulted in under representation of managerial and professional occupations. This is likely to be a

reflection of the limited 'upper–end' activities located in the country (reflected in the small number of NI PLCs and the 'small nature' structure of the economy). Many of NI's industrial and indeed professional services activities are not at the high end headquarter or design and strategy end of the spectrum and thus demand for managerial and professional occupations historically has been lower.

5.3.2 Technology

Almost half of CO_2 emissions are connected to the built environment. This means increasing emphasis on built environment based solutions, for example by renovating/retrofitting existing homes and non domestic buildings to be more energy efficient and building renewable power systems. This has the twin benefit of stimulating the economy and helping shape a low-carbon future. Tackling CO_2 in new buildings alone will not provide the required improvement, a major programme of adaptation and refurbishment of existing buildings will also be required.

For construction to be in a position to respond effectively, the industry has to ensure it has the skills to deliver. Generally 'future' skills are not entirely new skills, in many cases the skills are either an addition to, or amalgam of existing skills. Construction is a vast range of industries and many small firms will not currently require or utilise innovative methods, as the traditional parts of the industry will co-exist alongside the emerging 'green' industrial markets.

Some fairly broad observations can be made about what skills will required however, for example future skills will require an understanding of low/zero carbon technologies; appreciation of 'air tightness' in buildings; working to reduced tolerances; greater manufacturer input into training; more 'installer' type activities; and cross industry transfer of skills between linked sectors.

Although there are many new and innovative trends in the construction process, the main so called Modern Method of Construction (MMC) and the one that is likely to have the biggest impact is off-site manufacture of components that are later installed on site.

At present, across the UK, 12% of all construction activity is offsite manufacturing, requiring ongoing skills links with the manufacturing sector. Offsite construction could increase significantly as the industry moves from recession to recovery as the main aim will be to increase productivity and effectively achieve more with less.

Where it is used the main implications of MMC on skills demand in the future will be:

- Greater mechanisation and automation on-site. Although much of this can be achieved by wider use of existing tools and techniques, it will require skills, particularly in Health and Safety, focused towards heavy lifting, handling large loads and logistics on-site.

- Off-site MMC will involve a very substantial shift of building skills from site to off-site. This may mean a substantial reduction in 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. New skills needed will be along the lines of a better understanding of the composition and purpose of components and assemblies and how they can be moved and lifted.

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

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

Another important impact arising from MMC is the possibility that components will not just be manufactured off-site, but manufactured offshore. Currently many of the more advanced housing packages are manufactured abroad. To keep value added within the UK, contractors and manufacturers will need to rapidly develop the right blend of skills for off-site manufacturing and ensure that there will be adequate demand to achieve the economies of scale required by such methods.

MMC would also cover the introduction of new construction materials, although this may have limited direct impact on the demand for skills, as most of the actual or potential new materials remain within the scope of existing methods of application or installation. However there are a number of materials and methods used overseas that are not widely used in the UK at present, such as spray application of plaster, which could be more widely adopted in the UK given the right conditions. These and other developments in materials may allow the implementation of labour and skill saving methods, leading to new training requirements and possibly a reduction in the number of trades people needed with existing skills.

For professional services, in addition to an understanding of how new components will operate over the life time of a building, MMC will require 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. Overall an understanding of manufacturing methods will need to be combined with an understanding of construction methods.

The Northern Ireland Assembly has an important role to play in the recovery of the province, particularly in stimulating private sector growth and making best use of public funding as it becomes scarcer. Initiatives such as the Construction Industry Forum (for Northern Ireland) provide opportunities to share best practice and improve efficiency. The collaborative work between employers and devolved government is even more important at present, as stakeholders need to work together for the benefit of Northern Ireland and the construction industry's long term future.

Summary Box

- Construction employment in Northern Ireland declined by 5.6% in 2009 according to revised LFS data but is expected to return to growth in the province in 2011, a year earlier than for the UK as a whole.

- Over the five year period to 2015, employment is forecast to grow by around 5.8%. Despite this slow growth, there is still a need for new entrants to the industry, in particular to accommodate the large number of workers who are set to leave the industry in the next 10 years through retirement.

- There is increasing evidence that firms are responding to economic uncertainty by training operatives to be proficient in a number of trades so that fewer workers are required to complete a given project.

- Firms will need to consider, and plan for, how they will train the next generation of construction workers. There is a real risk that lessons will not have been learnt following the recession of the 1990's, and in the medium term, as the industry begins to recover

- To meet legislative and NI initiatives there are significant opportunities for occupations likely to be involved in the creation, installation and maintenance of products and services – e.g. designers, specifiers, building services engineers and planners.

- A key target is to increase the skills and qualifications of the Northern Ireland workforce, (including the Essential Skills of numeracy, literacy and ICT), encourage higher value-added jobs and enhancements to productivity.

- There is also a need to raise the number of graduates in the NI construction industry, where managerial and professional skills have been historically under-represented.

- Modern Method of Construction (MMC) and the one that is likely to have the biggest impact is off-site manufacture of components that are later installed on site.

- Where it is used the main implications of MMC on skills demand in the future will be: greater mechanisation and automation on-site, focused towards heavy lifting, handling large loads and logistics on-site; a substantial shift of building skills from site to off-site; and a greater understanding of general building issues such as tolerances, air/water-tightness, and the interaction between components.

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

- For professional services, in addition to an understanding of how new components will operate over the life time of a building, MMC will require integration of construction processes from design through construction to maintenance, which in turn implies a need for cross-disciplinary education for design teams.

- Having said this, construction is a vast range of industries and many small firms will not currently require or utilise innovative methods, as the traditional parts of the industry will co-exist alongside the emerging 'green' industrial markets.

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

Short Term: 2011 - 2012
Medium Term: 2013 - 2015
Long Term: 2016 - 2020

6.1 Introduction

Looking to the future it is likely that the factors outlined in the previous section will mean slightly different drivers for employment and skills within the construction industry, within Northern Ireland but also at the UK level. Both settings will be heavily influenced by trends in the UK economy in a wider sense. As such, any view on the future demand for employment and skills needs to consider the general economic and political backdrop.

6.2 Long-term forecast for the UK Construction Industry

The UK Sector Skills Assessment for the Construction Sector 2010, outlines the core scenario[57] to 2020, in summary this assumes the following:

- UK economy will continue to emerge from recession and there will be a gradual recovery to long term levels of GDP growth of around 2.0% p.a. through to 2020.
- UK construction output will start to recover from the end of 2011, although it will be at a lower level than GDP growth. Long term forecast for construction output is around 1.6% p.a. through to 2020.
- Construction output by 2020 will be around £118 billion (constant 2005 prices), an increase of around £20 billion on estimates of output for 2010.
- Although repair and maintenance work showed strong growth in 2010 Q2 construction output statistics, in the long term the overall ratio of new work to repair and maintenance (R&M) will fluctuate around the current level of 60:40 new work to R&M. As such new work will continue to be the main driver of construction output through to 2020.
- Overall levels of productivity growth will remain low, around 1.0% p.a., however productivity growth will feature more for new build rather than repair and maintenance work.
- Housing demand in the private sectors recovers, with current forecasts showing private housing output returning to 2007/2008 level towards 2019 - 2020.
- Work in the public non housing sector declines sharply from 2011. This is due to a combination of government cutbacks in capital spending taking effect, while work brought forward during the recession is completed.
- Commercial and industrial new work, both very badly affected in 2009, will recover through to 2020. However, output levels in 2020 will still be lower than those seen in 2008; therefore there is no real growth.
- Even with government cutbacks, infrastructure sector work is forecast to grow in the short to medium term and the long term prospects for energy infrastructure remain positive with the government commitment to reducing greenhouse gas emissions.

[57] Experian 2010

The core scenario recognises that although the construction industry is facing challenging times over the short term, when taking a long-term view through to 2020, output will recover, which is consistent with trends seen during previous recessions in the 1980's and 1990's. The strength of this recovery will be determined by work in the private housing sector due to long term mismatches between housing supply and household formation; however the continued strength of the infrastructure sector, returning investor confidence in the commercial sector and levels of R&M work will all help to shape the overall recovery.

6.2.1 Main risks to the economic core scenario

- **Public sector cuts are deeper than expected:** the full impact of the funding cuts announced as part of the Comprehensive Spending Review[58] will take time to become clear. Therefore there is a risk 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.

Having outlined the core scenario for the UK construction industry over the long-term (2011-2020), the following section discusses the employment forecasts over the short to medium term (2011-2015) for Northern Ireland's construction industry

6.3 Short to Medium term forecast for construction employment in Northern Ireland[59]

Total construction employment in Northern Ireland is forecast to reach around 75,000 by 2015, a 6% increase on the 2011 level. In 2015, 67,720 are predicted to be working in SIC 45, whilst 7,210 are expected to be working in SIC 74.2.

All occupational groups are expected to increase slightly over the forecast period with the exception of Floorers; whose requirement is predicted to decrease by 3%. The Repair and Maintenance sector will be responsible for most of the growth in employment.

A small average annual output growth (1.6%) leads to limited difference in demand between 2011 and 2015, particularly when projected productivity gains are accounted for. This is especially true among construction professionals. Anecdotal evidence also exists of a considerable amount of short-time working in the industry, which means that already existing excess capacity will need to be taken up before employers look to take on new staff as the recovery starts to strengthen.

The annual recruitment requirement (ARR) is a gross requirement that takes into account workforce flows into and out of construction due to such factors as movements between industries, migration, sickness, and retirement. However, these flows do not include movements into the industry from training. Thus, the ARR provides an indication

[58] Comprehensive Spending Review, 20th October 2010
[59] This data is based on provisional forecasts from the Construction Skills Network, 2011-2015 which may change slightly prior to final publication of the 2011-2015 LMI Reports.

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

The ARR for the 26 occupational groups within Northern Ireland's construction industry between 2011 and 2015 is illustrated in the table below. The ARR of 990 is indicative of the average requirements per year for the industry, as based on the output forecasts for the region.

Table 9 - Annual recruitment requirement by occupation - Northern Ireland

Occupation	2011-2015
Senior, executive, and business process managers	70
Construction managers	<50
Non-construction professional, technical, IT, other office-based staff	-
Wood trades and interior fit-out	160
Bricklayers	80
Building envelope specialists	-
Painters and decorators	-
Plasterers and dry liners	<50
Roofers	<50
Floorers	<50
Glaziers	<50
Specialist building operatives nec*	60
Scaffolders	90
Plant operatives	<50
Plant mechanics/fitters	70
Steel erectors/structural	<50
Labourers nec*	200
Electrical trades and installation	-
Plumbing and HVAC Trades	50
Logistics	-
Civil engineering operatives nec*	-
Non–construction operatives	-
Civil engineers	<50
Other construction professionals and technical staff	-
Architects	<50
Surveyors	60
Total (SIC 45 and 74.2)	**990**

* not elsewhere classified
Source: CSN, Experian Construction Skills Network 2010

The largest ARRs are expected to be for wood trades and interior fit out and labourers nec* all with a requirement of over 150. It should come as no surprise that the size of the ARR is often a function of the size of the particular occupational category, hence the significant one for wood trades and interior fit out.

Due to the economic downturn, its affects on the construction industry, and the fact that Northern Ireland is a small construction market, many of the occupational ARRs in the province have fallen below 50.

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

Ultimately however, these forecasts are heavily dependent on how public expenditure cuts are applied in the province. Whereas the Comprehensive Spending Review gives some reasonable detail for the English regions in terms of the capital expenditure implications, how overall reductions in the level of finance available to the devolved nations are applied is in the hands of the devolved administrations.

6.4 Political/Legislative drivers for employment and skills

There are several political/legislative drivers that will impact upon employment and the skills required across the construction industry in Northern Ireland such as sustainability and health and safety. However the key drivers in the future are policy and legislation around the low carbon agenda. This move towards a low carbon economy is already beginning to have an impact upon the construction industry and with 2020 being a key target date, the impact upon construction will only increase.

Examples of policy/legislation relating to low carbon which will have a direct and lasting impact upon the construction industry, and ultimately skills and employment are;

- Building regulations - begun to feature energy efficiency as a requirement for new housing and planned future changes will introduce increasing standards.
- Feed in Tariffs (FIT)- introduced in April this year to stimulate demand for microgeneration[60] schemes such as photovoltaic power.
- The Renewable Heat Incentive (RHI) - introduced in 2011 to stimulate demand for distributed heating systems, similar to Feed in Tariffs.
- Green Deal - to come into effect around 2012 to help homeowners install energy efficiency measures.

Although the focus for low carbon measures is currently centred on housing, due to the scale of potential improvements, it will inevitably impact on all sectors of the construction industry in the future, as the following highlights:

- New housing (private and public sectors) – building regulations, smart meters
- Housing R&M (private and public sectors) – Green Deal, FIT, RHI, smart meters
- Infrastructure – building low carbon power generation e.g. wind power, nuclear, carbon capture and storage, and building a smart grid
- Public non-housing – building regulations and government taking lead on energy efficiency targets

60 Micro-generation is the production of heat and power by individuals or communities – typically by renewable energy – enabling them to meet their own requirements at, or approaching, zero-carbon cost.

- Commercial – building regulations, energy efficiency
- Industrial – building regulations, energy efficiency

Low carbon construction is a clear driver for skills demand as having a workforce that is equipped with the right skills will be a key factor in meeting the targets set out in legislation.

In new housing it is not the current skills that are the main issue, it is the attention to detail that is required when working with new technology and being familiar with the subtle adaptations that are required. For example ensuring airtightness or minimising cold bridging are two techniques that are used to improve energy efficiency and for both of these it is attention to detail rather than the underlying skills that would influence the eventual energy performance of the building.

Even before work begins on site there will be an increased demand for low carbon design related skills to ensure that new buildings are designed for maximum energy efficiency, rather than installing technology. It is fabric first and sometimes straightforward design and planning measures such as the type of material used or aspect of structure that can yield cost effective low carbon solutions when compared to microgeneration schemes.

There are however some sectors and occupations where low carbon skills will have a significant effect in terms of a skills gap, a skills shortage or possibly both:

- Construction Managers and Supervisors (all sectors – skills gap); understanding relevant legislation and the implications that this has for the build process.
- Architects (all sectors – skills gap); low carbon design skills and material specification.
- Installation of solid wall insulation (Housing R&M – skills shortage); will be important measure for improving the energy efficiency of existing housing and potential market means a risk of not having sufficient workers.
- Installation of microgeneration measures (Housing R&M and new build – skills gap and shortage); legislation will stimulate demand for microgeneration technology which has to be installed by accredited workers. Although the underlying skills base already exists there is a potential shortage of workers with the top up skills to install these measures.
- Building low carbon power generation (Infrastructure – skills shortage and gap); although this work will require both civil engineering and engineering construction skills, the potential scale of measures being introduced in the future could lead to a shortage of experienced workers. Also some aspects of construction such as nuclear power have not be undertaken in the UK for 20 years therefore skills gaps may exist for key occupations.

The increasing importance of low carbon construction will involve workers being able to adapt existing skills, enhance or learn completely new skills. This will become an essential element of skills demand for all areas of the construction industry through to 2020 and beyond.

There is also likely to be an increase in demand for multi-skilling to support the installation of low carbon technologies. Installing a solar photovoltaic roof system at the moment involves a combination of roofing and electrical skills while installing a solar hot water system would require roofing, plumbing and electrical skills. At the moment, given the relative immaturity of the market it is very difficult to predict what level of multi skilling would be needed, although having a flexible and adaptable workforce is likely to be something employers would value.

Low carbon construction will also drive skills demand for the uptake of more modern methods of construction, such as pre-fabrication. Building off site then using on-site

assembly should give a quicker and more efficient process that results in time, cost and quality improvements. Examples of the knock on effect on skills would be;

- Increasing assembly of components on site would require more mechanical handling for skilled trades
- Designers and construction managers would have to understand how the various elements of the new building structures inter-relate.
- Increase in demand for onsite logistics
- Planning skills for construction management to ensure that builds progress smoothly.

Overall, the move towards low carbon construction will be the most significant driver of skills demand over the next ten years. The range of work carried out across the construction industry inevitably means that low carbon will mean different things to different sectors. This in turn will lead to different skills being needed to take advantage of the range of opportunities that will be presented and that will need to be informed by quite specific future labour market intelligence.

Summary Box

- The core scenario recognises that although the UK construction industry is facing challenging times over the short term, when taking a long-term view through to 2020, output will recover, which is consistent with trends seen during previous recessions in the 1980's and 1990's. The strength of this recovery will be determined by work in the private housing sector due to long term mismatches between housing supply and household formation; however the continued strength of the infrastructure sector, returning investor confidence in the commercial sector and levels of R&M work will all help to shape the overall recovery.

- The two main risks to the core scenario are
  - Public sector cuts are deeper than expected
  - Private sector investment fails to return

- Total construction employment in Northern Ireland is forecast to reach around 75,000 by 2015. The Repair and Maintenance sector will be responsible for most of the growth in employment.

- The Annual Recruitment Requirement (ARR) for the 26 occupational groups within Northern Ireland's construction industry between 2011 and 2015 is predicated to be 990.

- The key driver for future skills and employment is the low carbon agenda.

- The increasing importance of low carbon construction will involve workers being able to adapt existing skills, enhance or learn completely new skills. This will become an essential element of skills demand for all areas of the construction industry through to 2020 and beyond.

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

7.1 Introduction

The suddenness, and relative unexpectedness, of the recent recession, point to the limitations when attempting to look at the future and highlight the importance of being aware of a wide range of potential drivers that impact upon the future delivery of skills and employment in the construction industry. The impact of the recession is still being felt across the industry and as the path the recovery is taking becomes clear, more accurate analysis is possible.

It is interesting to note that in output terms construction in Northern Ireland has been through a double dip recession[61], and the structure of the industry, being more reliant on new work and public investment than in general across the UK, means certain sub-sectors have been significantly affected. There appears to be a measure of continuing uncertainty across the UK industry regarding the immediate future[62] and it is still unclear what the impact will be for Northern Ireland from the overall cuts recently described in the Comprehensive Spending Review (CSR) in Westminster.

In determining the future supply of skills and employment for the construction industry there are some conclusions that can be tentatively drawn from existing authoritative reports. This section will draw from relevant reports produced by the Departments of the Northern Ireland government, as well as Working Futures[63], 2020 Vision – The Future of UK Construction, produced for ConstructionSkills by Experian and SAMI Consulting. Other reports quoted are from the Higher Education Policy Institute, official figures from the Office of National Statistics and Government Actuary Department, as well as ConstructionSkills own figures on training which are the most up to date available.

In the short-term it is possible to say, with some degree of safety, that trends in skills supply probably won't deviate a great deal from its current course. There is little that can be done to change events, whether they be numbers in training or migrants wanting to enter the country, that have already been set in motion. The main focus of this section, therefore, will be attempting to inspect how skills supply may deviate from this over the medium-term (up to 2015) and the long term (up to 2020).

This section will also back at the last two major recessions across the UK in 1980-82 and 1990-92 with a time series on training, to draw out conclusions for the recovery of training and any specific implications for Northern Ireland.

7.1.1 The Economy

Section 6 sets out the core scenario for the industry through to 2020 and in this vision of the future, the fall out from the recession continues well into the medium-term, acting as a continuing brake on construction activity and consequent demand for skills. It predicts that total construction output growth is low, at least in comparison with the pre-recession years – averaging only around 1.6% growth between 2011 and 2015[64] in Northern Ireland and 1.5% across the UK, and that public spending is reduced to attempt to redress the high levels of debt and the budget deficit.

Over the medium to long term things are projected to be more optimistic across the UK. The Working Futures report[65] predicts output growth, albeit at somewhat modest rates of around 2% per annum through to 2017, which is consistent with the view taken in the core scenario. So, from 2015 onwards it would seem likely that the supply of skills and

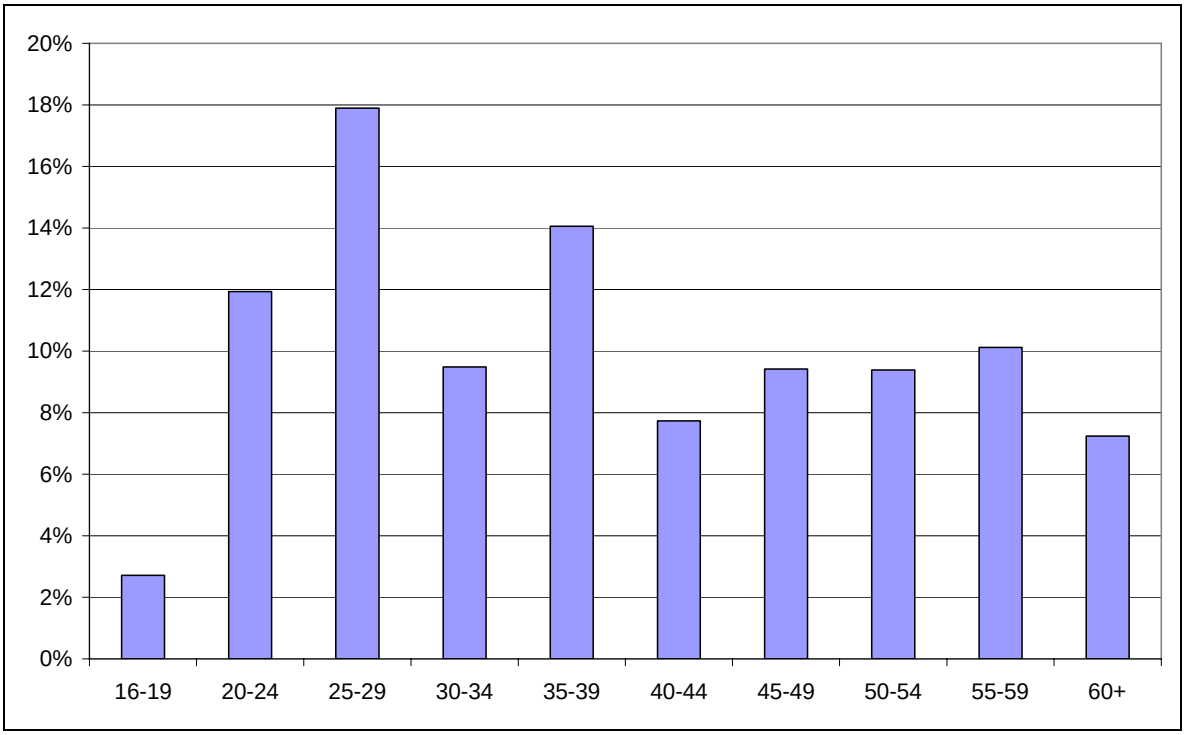
[61] Northern Ireland Construction Bulletin, Q2 2010, NISRA
[62] Construction Trade Surveys include surveys undertaken by Experian, Civil Engineering Contractors Association (CECA), Federation of Master Builders (FMB), Construction Products Association (CPA) and National Specialist Contractors Council (NSCC)
[63] Working Futures 2007-2017 report produced for the UK Commission for Employment and Skills by the Warwick Institute for Employment Research and Cambridge Econometrics, Warwick University, 2008
[64] ConstructionSkills and Experian, Construction Skills Network, 2010
[65] Institute of Employment Research, Working Futures 2007-2017, Warwick University, 2008

employment will begin to increase in response to the expected rising demand, though this rise will take some time to have effect due to the lag between people choosing to take up training and being available for work.

7.1.2 The Industry

Between now and 2020 approximately 17% of the manual construction workforce in Northern Ireland will reach retirement age (see Chart 11), resulting in a loss of accumulated skills and experience - particularly those involved in the heavier trades and labour.

Chart 11 - Proportion of Manual Workers in Northern Ireland's Construction Industry by Age Range – 2010



Source: Office for National Statistics, Labour Force Survey

In normal years this would be more than matched by new recruitment, however, given the recent recession and downturn in recruitment unless economic circumstances force later retirement, certain skills will become less available. If reliance is to be put on an ageing workforce, compensatory changes in workload on-site will be necessary.

The loss of the ageing professional workforce (designers, engineers, technicians) is likely to be less of a problem than that of the labour workforce, as professionals are able, and frequently prefer, to continue working. Indeed the problem may be less a shortage of staff than a need to retrain a group of older professionals who do not have the skills to meet the new needs of the sector.

7.1.3 Demographic data

Northern Ireland's population is expected to grow by over 140,000 between 2008 and 2020 to reach a little under 2 million people. The increase in working age population (16-70) is much lower, however, at a little under 64,000; and when looking specifically at the male working age population (construction being a predominantly male-dominated industry) the increase is 35,000 people between 2008 and 2020, or approximately 3,000 males per annum[66].

[66] Analysis of Government Actuary's Department population data 2007, Projections Database accessed November 2009

7.1.4 Political Initiatives

The political climate has shifted considerably over the last year, and there has been a focus from the government in Westminster on the cutting of expenditure, aiming to reduce the budget deficit and high levels of public debt. At this stage, it is hard to quantify the effect that some of the most recent cuts in the Comprehensive Spending Review (CSR) will mean for the supply of skills. However it is possible to say that in the immediate term cuts in significant sectors for construction (such as public housing) will affect the need for certain skills and potentially may negatively affect public perception of training in that area. In the longer term any cuts to funding for education in the region will have an impact on the numbers of people able to enter the system and thus to join the industry.

Initiatives such as the Sustainable Development Strategy and the associated Implementation Plan will drive the development of needs for skills in the future, and will have an influence on what kind of skills are being supplied.

In general, given the levels of unemployment and the need for a healthy economy, raising opportunities for training and learning are still key priorities, and the Conservative-Liberal Democrat coalition will be keen to show that they are committed to investing in the future of the construction workforce.

The changes in demand noted earlier will be reflected in the supply of future construction workers. They will require skills that focus more toward assembling manufactured components, utilise computerised processes at each stage of the construction process and have a greater understanding of trades other than their own, in particular how different aspects and components of a finished building will interact.

7.2 Sources of the supply of skills and employment to the construction industry

Having looked in the preceding section at how skills are likely to change over the course of this forecast, the next question to answer is where the people with these skills are likely to come from. There are three key routes for skilled workers to enter construction:

- after training for a qualification – at both craft and professional levels
- by migrating from another country
- by bringing relevant skills from other industries.

For the purposes of this report the last of these will not be considered as it does not contribute to the stock of skills in Northern Ireland, and it will to some extent be off-set by those leaving construction to work in other industries. It is also assumed that those recently made redundant will probably be lost to the industry forever – or at least will need re-training in order to meet the skills demands already discussed. There is the possibility that this could lead to long term skill gaps during the recovery, and it is still not clear how many workers will return to the industry and how many will lose their skills or their ties to the world of work.

7.2.1 Craft Training

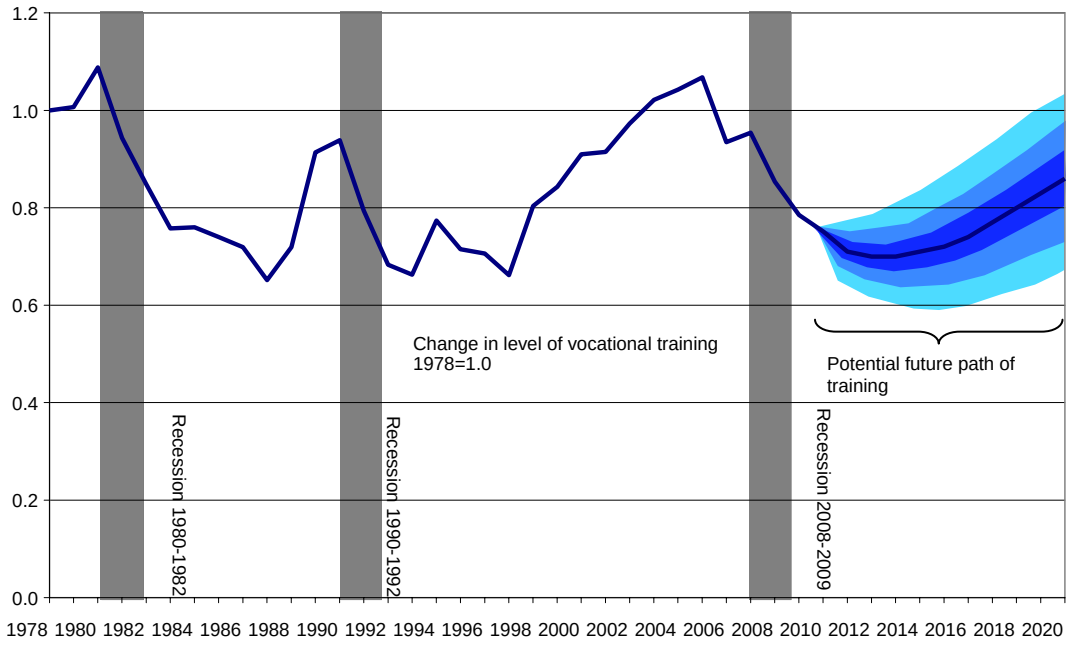
The main supply of skills in the UK has traditionally been via work-based training, and Section 3 has shown that this is especially true in Northern Ireland. The largest source of investment in craft training comes from employers, and is closely correlated with levels of employment within the industry and expectations for future work.

To link employment and training precisely is difficult, and indeed would probably vary depending on which point in the economic cycle a measurement is taken. While considering this, a very high level view can be gained from looking at the past two recessions, and what happened to training in their aftermath.

Before the current recession the two previous recessions in the UK were in 1980-82 and 1990-92. Although data is not available for devolved nations, as can be seen in Chart 2, training in GB fell dramatically throughout both recessions, and continued to fall for some time afterwards (although with a short-lived upsurge following the 1990 recession). After both recessions training did not reach its lowest point until some five years after the technical end of the recession, indicating that, like employment, this is a lagging indicator of economic activity.

There are clear differences between this recession and previous ones – the fact that levels of training began to fall before the onset of the economic downturn in Q2 2008; the depth and length of the recession; and the extreme fiscal responses applied in an attempt to mitigate the severity of the downturn all combine to give caution to replicating past trends. However the relative extent of training covered by the survey is helpful to put the recent downturn and recovery in the context of previous recessions.

Chart 12 - Relative change in levels of construction training 1978 – 2020: GB



Source: ConstructionSkills Trainee Numbers Survey

Chart 12 depicts the probability of various outcomes for vocational training in GB based on possible changes in employment. The bands widen as the time horizon is extended, indicating the increasing uncertainty about outcomes. There are varying degrees of probability that it may exceed or fall short of this based on how quickly and strongly the economy recovers from recession.

Of course the number of people entering training will not equate to the number of skilled workers available to work in construction. The other two factors to consider are likely completion rates, and the proportion of completers who stay in construction after qualifying.

Data for achievement rates on construction courses in the Northern Ireland further education sector (2007/08)[67] shows an achievement rate of 76% and having achieved a qualification, it has previously been shown that a high proportion of people choose to

[67] Department for Employment and Learning

stay in construction. The Construction Apprentices Survey[68], though conducted in a different industry climate, suggested that some 95% of successful completers stay in the construction industry, mostly in the trade in which they studied.

7.2.2 Higher Education

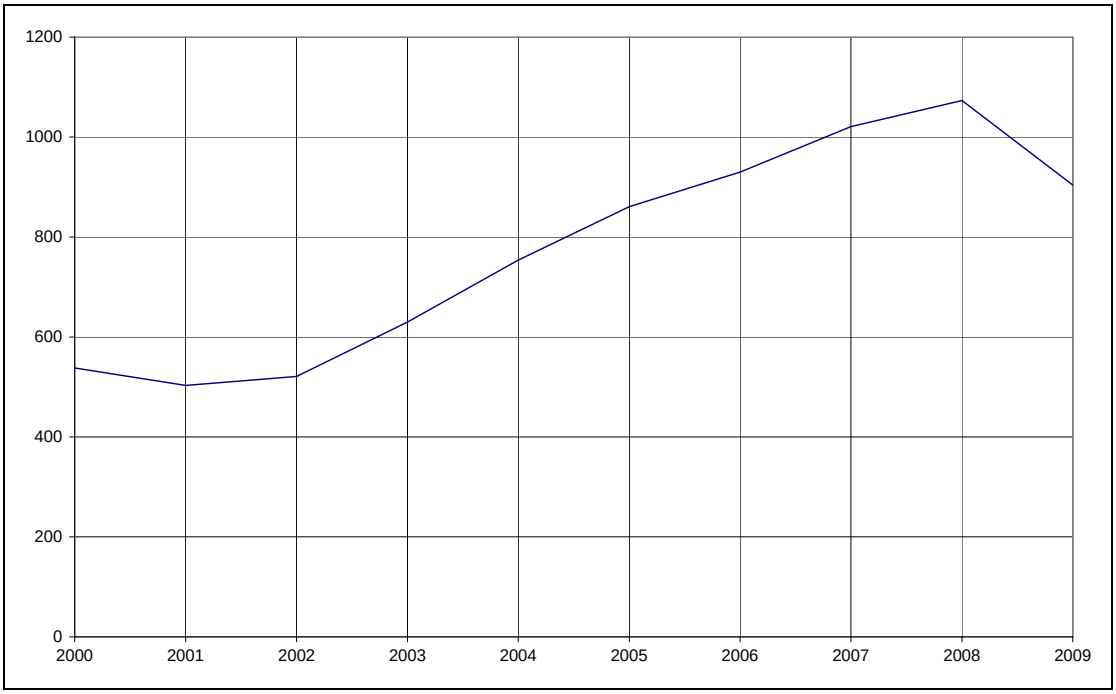
While there is no research looking specifically at the future uptake of Built Environment degree courses, The Higher Education Policy Institute have produced a report[69] which looks at the likely demand for degree courses in England across all subjects. While the HEPI report focuses on England, their conclusions and findings are equally applicable to the UK as a whole and devolved nations, and implications are drawn for the UK, using the same or similar sources to HEPI.

The HEPI report considers three factors that influence demand for Higher Education – changes in the population from which students are drawn; the ability (in terms of qualifications) of those people to enter higher education; and the willingness (in terms of social background) of this population to participate in higher education. These interact in a complex way with potentially increasing achievement rates and social aspirations working to counteract falling numbers in the crucial 18-20 year old population over the next decade.

The trend in recent years has been one of increasing demand for higher education places, despite the introduction of variable fees, influenced largely by increases in the 17 to 30-year-old population.

The number of applicants to Built Environment degree courses in Northern Ireland has increased since 2001 until 2008, with 2009 seeing a fairly significant fall in first degree applicants.

Chart 13 - UK Domiciled applicants to Built Environment degree courses in Northern Ireland 2000 – 2009

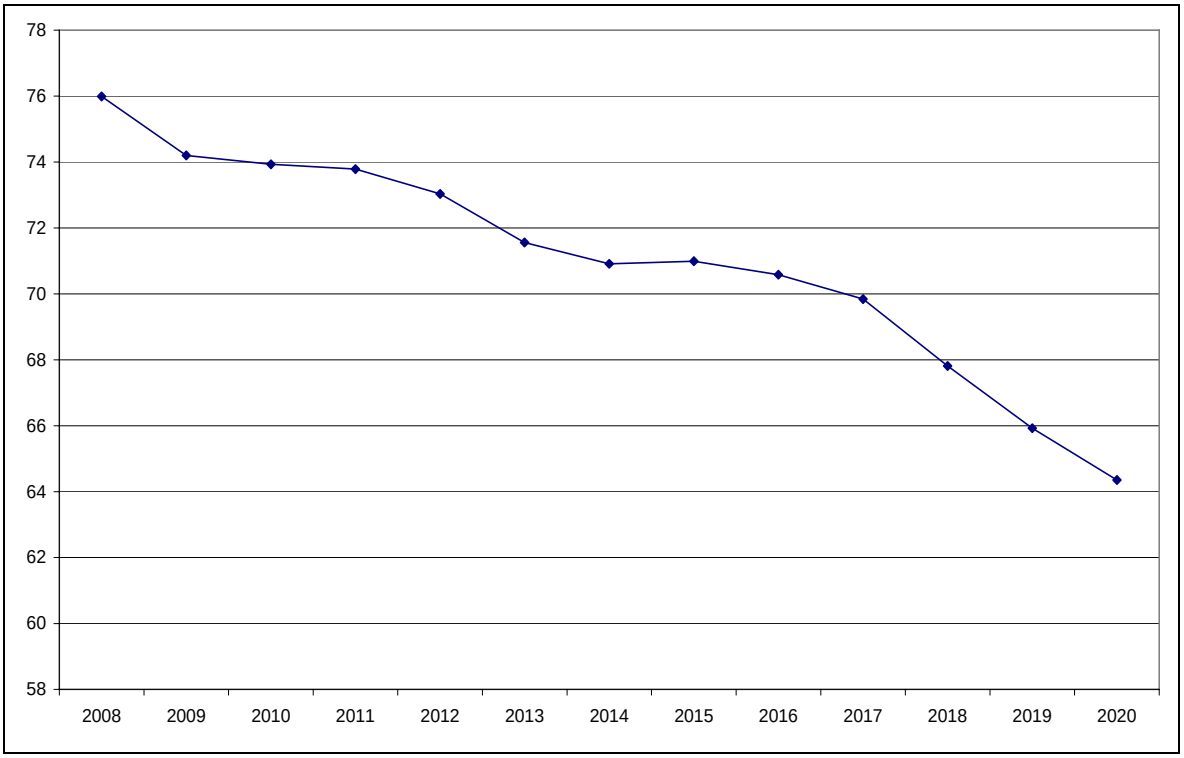


Source: UCAS

[68] ConstructionSkills, Construction Apprentices Survey, 2003
[69] Higher Education Policy Institute Bahram Bekhradnia and Nick Bailey, Demand for Higher Education to 2029, 2008

The graph below (Chart 14) shows the way the 18-20 year old population has changed and how it will change in the next 10 years or so. The 18-20 year-old population is projected to decline significantly in the coming decade – by more than 13% between 2010 and 2020. This will apply a strong downward pressure on the number of applicants to higher education which will only be partially offset by an increase in the number of part time under-graduates in response to the current Governments Higher Education Strategy outlined in its Higher Ambitions report[70].

Chart 14- Number of 18-20 year olds in the Northern Ireland population from 2006 to 2020



Source: Government Actuary's Department

While the above graph may seem to point to an impending downturn in the number of higher education students, HEPI point to changing social composition of the population – fewer people are being born in the lower socio-economic groups and more in the higher groups that traditionally embrace higher education – as a cause for optimism.

HEPI's base projections (based on demographic factors alone) give a decrease in student numbers between 2007/08 and 2020/21 of 2.5%. Under their high variant scenario (where participation rates increase to their projected maximum) the proportion of all students increases between 2007/08 and 2020/21 by 9%. In Northern Ireland[71] in 2008/9 there were 1074 UK domiciled first-year enrolments for Built Environment degree courses. Applying HEPI's scenario based projections provides an estimate of course enrolments for 2020/21 of 1045 (-2.5%) to 1170 (+9%). However given the significant fall in applicants between 2008 and 2009, it can be seen that partaking in education seems to be more responsive to demand and other drivers in Northern Ireland than across the UK.

Two major factors that had not come into play at the time of HEPI's report were the recession and more recently the reviews of Higher Education undertaken by Lord Browne and in Northern Ireland, Joanne Stuart.

[70] Department for Business, Innovation & Skills (BIS), Higher Ambitions: The Future of Universities in the Knowledge Economy, November 2009
[71] Higher Education Statistics Agency 2008/9 enrolments, published 2009

There may be strong pressures for young people in the short term to remain in education due to the recession. If this turns out to be the case then this short term outcome would allow time for the other factors mentioned in HEPI's report – socio-economic changes and participation rates – to stabilise and possibly increase Northern Ireland's already high participation rates in HE[72].

Additionally, the recently released Browne Report and Stuart Report will influence decisions on the provision of Higher Education in Northern Ireland in coming years. The Stuart Reports suggestions are to be considered in light of the Browne report in the form of a consultation process. The Browne Report's recommendations, in terms factors affecting the future supply of skills, included students being charged differing amounts in an effort to increase investment and student choice, and also that those doing part time degrees should be financed (for the student) proportionately. The report believes that student numbers will increase and indeed makes proposals for a 10% increase in available student places.

Although it is possible that there will be moderate growth in Higher Education starts between 2010 and 2020 it is unlikely that the dramatic rises that pre-ceded this period will be repeated. Assuming consistent moderate growth of around 1% a year between 2008 and 2020, this would equate to in the region of an additional 120 higher education starts in Northern Ireland.

As with further education not all these individuals will go on to work in construction after graduating. In fact data from HESA's Graduate Destination Survey[73] suggests that prior to the recession only 21% of UK domiciled, first year first degree students who were available for employment found a job in the construction industry within six months of graduating. Even if the assumption is made that those who were still unemployed after six months ultimately found a career in construction this still equates to a 25% rate for graduates entering construction.

7.2.3 Migration

There is limited comprehensive data available to inform views on the levels of migration of skilled workers into the construction industry, and what is available is generally at a UK level. While the Labour Force Survey indicates that over 81,000 workers have entered the UK construction industry over the last ten years, with more than half coming from Poland, Lithuania, Romania, South Africa and India[74], it is recognised that Northern Ireland has a very different profile, with net migration varying widely and a large proportion of movement to and from the Republic of Ireland

It has been shown[75] that long-term net-migration in Northern Ireland went from a yearly loss of 1,900 in 2000/1 to a peak influx of around 9,700 in 2005/6 and 2006/7 before falling back to around 2,100 in 2008/9. This reduction is considered likely to decrease according to certain indicators, in part associated with the recession and to the more stringent points-based immigration policy for workers from outside the EU. This view is supported by the Working Futures report, which considered the UK, concluding that the previous high rate of immigration is not expected to be sustainable over the medium term.

The working age population of non-UK/Republic of Ireland born persons has been estimated to have increased rapidly in 2006 but from 2007 to 2009 it has remained fairly

[72] Northern Ireland's higher education participation rates are best in UK http://www.delni.gov.uk/index/press-releases/press-releases-october10-december10/northern-ireland-s-higher-education-participation-rates-are-best-in-uk.htm Accessed November 2010
[73] Higher Education Statistics Agency, Destinations of Leaver from Higher Education Survey, 2006
[74] Office for National Statistics, Labour Force Survey, Spring 2009
[75] Long-term International Migration Estimates for Northern Ireland, 2009, NISRA

steady at around 50,000[76] indicating the dampening effect of the recession on migration. It is possible that as growth returns this number will again begin to increase, impacting the need for and future supply of skills.

7.3 Variations to the core scenario

The possible variations to this scenario have already been mentioned. One of the key determinants for the future direction of skills supply is the strength of the recovery from the current recession. This section assumes a long recovery with modest annual growth. It assumes a downward trend in the level of inward migration, and a steady increase in those able and willing to undertake Higher Education courses.

The two obvious variations to this scenario occur with stronger or weaker growth to that forecast. This is key as one of the main drivers for skills supply, especially through Further Education, is the demand for those skills. Although the core scenario shows the potential for further education training returning to its pre-recession levels by 2020 this depends on confidence in the future growth of the industry returning – which in the medium-term will depend upon the strength of economic recovery and further details of Government cuts.

Of all the areas discussed in this report Higher Education is probably the least prone to direct short-term fluctuations in the industry and economy. Although this section anticipates a long period of slight growth in the number of UK domiciled, first year, first degree students, this could easily be reversed (a long and slow decline) depending on demographic changes and policy decisions.

Whatever happens in the medium to long term, the safest assumption to make is that the state of qualifications and skills supply seen before the current recession will not be seen again for a very long time.

Summary Box

- The supply of skilled employees to the UK construction industry is expected to remain subdued over the next five years due to suppressed demand from employers following the recession.
- Having achieved a qualification, previously it has been shown that some 95% of successful completers stay in the construction industry, mostly in the trade in which they studied.
- Applicants to Higher Education courses have fallen in 2009, but it is anticipated that numbers are likely to gradually increase up to 2020, with the pace of change to be much slower owing to demographic changes in the core 18-20 year old higher education population, which is expected to decline by 13% between 2010 and 2020 and potentially the impact of changes in student fees.
- Migration to and from Northern Ireland varies considerably and the population of non-UK/ROI born persons was increasing before 2007, indicating that as growth returns this number may begin to increase once more.

[76] NISRA migration statistics, International In-migration, Tbl 1.36 LFS based estimates of non-UK/ROI persons. http://www.nisra.gov.uk/demography/default.asp18.htm Accessed November 2010

8. Conclusion

Increasing concerns have surfaced in the Province regarding the future of funding for the Northern Ireland Investment Strategy and this has been further exacerbated by the recent announcements as part of the Comprehensive Spending Review, which indicated a 37% cumulative real decline in the Departmental Capital Budget for the Province over the 4 year period of the Spending Review.

It is these concerns that are leading to a fairly modest rate of output growth for the construction industry in the Province over the next 5 years. Unfortunately for Northern Ireland, its economy is more reliant on the public sector than the UK as a whole, as is its construction industry and thus public expenditure cuts are likely to affect the Province disproportionately.

It is in this climate of uncertainty that the industry is most at risk, not only in terms of its ability to deliver existing projects, but also in terms of safeguarding jobs and ensuring opportunities exist for the next generation of workers whether apprentices, graduates or migrant workers.

Consequently, the spotlight is very much focussed on how construction can adapt to the changes without undermining potential for future growth. Recovery from previous recessions has been hindered by skills gaps and shortages caused by job losses. Whilst contractors have endeavoured to retain capacity through the recent recession, experience suggests that skills gaps and shortages will become evident as growth returns to the sector.

The exodus of skilled workers from the industry through redundancy and retirement will also impact on the ability of the industry to transfer knowledge from experienced workers, potentially further hindering long-term growth.

The construction sector of the future will, despite much forecasted change, share many features with the industry of today. Many site activities, including site preparation will still need to take place, materials (albeit in smaller volumes) will still be stored around sites and construction will require working at height. Staple materials such as wood, steel, glass and plastics will still be in use alongside new composites, and skilled labour will be required to assemble these materials (whether on-site or in a factory environment). However, the methods and technology employed during this construction process will be drastically different.

The move towards low carbon construction will be the most significant driver of skills demand over the next ten years. The range of work carried out across the construction industry inevitably means that low carbon will mean different things to different sectors. This in turn will lead to different skills being needed to take advantage of the range of opportunities that will be presented and that will need to be informed by quite specific future labour market intelligence.

However, new ways of working will not all require totally new skills, but will often be an addition to existing workers skill-sets. Certainly to deliver a more effective, efficient and productive built environment sector, designing and constructing to minimise the use of natural resources, will mean a significant shift in the skills of large parts of the existing workforce. If the construction sector, as proposed, adopts more sustainable working practices backed by new and emerging technologies then this will inevitably result in the erosion and revision of some traditional trade activities with the introduction of a more generalist or multi-skilled approach to the construction process. In this respect, the recession and subsequent recovery offers a real opportunity to redefine a number of existing roles within the industry, as well as presenting additional opportunities in new areas.

Taking these factors into consideration, the industry must not only broaden its horizon with regards current skills needs, but must also lengthen its perspective with regards future needs and possibilities. The reality is that the industry has consistently performed well in recent years, probably better than expected, outperforming its perceived limitations and doing so in spite of weaknesses in skills supply. However, it is extremely doubtful if this approach can sustain further significant growth. The current project-based structure of the industry does not provide an easy business case for training and the extensive use of the self-employed and labour-only sub-contracting presents a significant barrier in any attempt to promote a training culture and qualify the workforce, so there is a need to develop new methods of provision and funding which reflect the reality of the sector.

Driving this agenda forward will require strength and commitment from a multitude of stakeholders and employers at every level. In order to maximise opportunities the construction industry will need to develop not only its technical capability but also its ability to interface with other sectors and work in tandem with multiple agencies. This will require a significant shift in the skills and competence of the existing industry as part of a major process of innovation. In order to establish innovation and integration, the underlying skills and qualification structure needs to be examined - from entry through to high level - to ensure that the skills are backed by qualifications and, where necessary, accreditation and/or certification.

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

9. Appendix

9.1 Glossary of Acronyms

ARR	Annual Recruitment Requirement
BIS	Department for Business, Innovation and Skills
CAD	Computer Aided Design
CERT	Carbon Emissions Reduction Target
CIS	Construction Industry Scheme
CSN	Construction Skills Network
CSR	Comprehensive Spending Review
EPC	Energy Performance Certificates
EU	European Union
FE	Further Education
FIT	Feed in Tariff
FMB	Federation of Master Builders
GDP	Gross Domestic Product
GVA	Gross Value Added
HE	Higher Education
HEPI	Higher Education Policy Institute
HESA	Higher Education Statistics Agency
HIP	Home Information Pack
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
ONS	Office for National Statistics
PAYE	Pay As You Earn
PLC	Public Limited Company
QCF	Qualifications and Credit Framework
R&M	Repair and Maintenance
RHI	Renewable Heat Incentive
ROI	Republic of Ireland
SIC	Standard Industrial Classification
SOC	Standard Occupational Classification
SSC	Sector Skills Council
STEM	Science, Technology, Engineering and Mathematics
SVQ	Scottish Vocational Qualification
TASC	Training and Assessment Services for Construction
UKCES	UK Commission for Employment and Skills
VAT	Value Added Tax
VRQ	Vocationally Related Qualification

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	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. 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.
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 ConstructionSkills Footprint, SIC 2003

SIC 45	**Construction**
SIC 45.1	**Site Preparation**
SIC 45.11	Demolition and wrecking of buildings; earth moving
SIC 45.12	Test drilling and boring
SIC 45.2	**Building of complete construction or parts; civil engineering**
SIC 45.21/1	Construction of commercial buildings
SIC 45.21/2	Construction of domestic buildings
SIC 45.21/3	Construction of civil engineering constructions
SIC45.22	Erection of roof covering and frames
SIC 45.23	Construction of motorways, roads, railways, airfields and sport facilities
SIC 45.24	Construction of water projects
SIC 45.25	Other construction work involving special trades
SIC 45.3	**Building Installation**
SIC 45.32	Insulation work activities
SIC 45.34	Other building installation
SIC 45.4	**Building Completion**
SIC 45.41	Plastering
SIC 45.42	Joinery installation
SIC 45.43	Floor and wall covering
SIC 45.44	Painting and glazing
SIC 45.45	Other building completion
SIC 45.5	**Renting of construction or demolition equipment with operator**
SIC 74	**Other Business Activities**
SIC 74.2	**Architectural and engineering activities and related technical consultancy**
SIC 74.20/1	Architectural activities
SIC 74.20/2	Urban planning and landscape architectural activities
SIC 74.20/3	Quantity surveying activities
SIC 74.20/4	Engineering consultative and design activities
SIC 74.20/5	Engineering design activities for industrial process and production
SIC 74.20/6	Engineering related scientific and technical consulting activities
SIC 74.20/9	Other engineering activities

Source: Office for National Statistics, UK Standard Industrial Classification of Economic Activities 2003

9.4 ConstructionSkills Footprint, SIC 2007

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

71.11	Architectural activities
71.11/1	Architectural activities
71.11/2	Urban planning and landscape architectural activities
71.12	Engineering activities and related technical consultancy
71.12/2	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 Descriptions[77]

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 Covered**[78]
(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.

[77] Office for National Statistics, Construction Statistics Annual 2010
[78] 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.
Roads	Roads, pavements, bridges, footpaths, lighting, tunnels, flyovers, fencing.

(d) Non-Housing Excluding Infrastructure[79]

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).
Warehouses	Warehouses, wholesale depots.
Oil	Oil installations including refineries, distribution pipelines and terminals, production platforms (but not modules or rigs).
Steel	Furnaces, coke ovens and other buildings directly concerned with the production of steel (excludes offices and constructional steelwork).
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.
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.
Universities	Universities including halls of residence, research establishments.
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.
Offices	Office buildings, banks, embassies. Police HQ's, local and central government offices (including town halls) are classified to the public sector.
Entertainment	Theatres, concert halls, cinemas, film studios, bowling alleys, clubs, hotels, public houses,

[79] 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.

	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, stagers 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	**Date**
ConstructionSkills and Foras Áiseanna Saothair (FÁS). Workforce Mobility and Skills in the UK Construction Sector – Northern Ireland Report	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:

- the qualification and skill levels of the construction workforce in the UK and ROI
- the extent to which the workforce in each region is constituted of workers originating or living in other parts of the UK (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

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.

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 263 workers in across 23 sites in Northern Ireland

Name	**Date**
ConstructionSkills and Experian, Construction Skills Network, 2011-2015 – Northern Ireland	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.
For more information see CSN explained document at
http://www.cskills.org/uploads/csn2010-2014explained_tcm17-18118.pdf

Name	**Date**
CITB Northern Ireland. Research into Training and Skills Needs.	February 2007

Aim/Objectives
The overarching aim of the research was to gather up-to-date information to provide an insight into each of the following:
• Skills gaps and skills shortages;
• The variety and sources of learning and training used by employers;
• Employer attitudes and motivation towards learning and training;
• New entrant information;
• Migrant workers; and
• The provision of an industry profile in terms of company size and type of work undertaken.

Methodology
A dual methodology consisting of both qualitative and quantitative research was used for this particular study

The quantitative survey was undertaken using a telephone methodology - with 508 interviews completed The final stage of the assignment was a post-survey qualitative workshop conducted with representatives from the CITB (NI) Board and Committee members. The aim of the workshop discussion was to obtain the views and opinions of the participants with respect to the training and skills needs of the industry; and how these compared with the views of the respondents included within the survey.

Name	**Date**
ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (unpublished)	Wave 1: February 2005 Wave 2: September 2005 Wave 3: June 2006 Wave 4: December 2006 Wave 5: August 2007 Wave 6: March 2008 Wave 7: July 2008 Wave 8: March 2009 Wave 9: November 2009 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
30 Qualitative and 1,500 quantitative interviews (both phases conducted by telephone) with

employers and the self-employed operating within the traditional building sector (SIC45) and the Professional Services sector (SIC 74.2).

Name	**Date**
ConstructionSkills and Construction Industry Council, Impact of the Recession on Construction Professionals.	2009
Aim/Objectives To provide an understanding of how the current recession was impacting on the UK professional services sector, including: 1. How employers have responded to current changes in the economy; and 2. to what extent employers are planning for future growth	
Methodology The research was split into two discrete packages. Experian was commissioned to analyse the trends in official data relating to the construction sector and in particular to construction professionals, and combine this with the outputs of the Construction Skills Network employment model to produce a view of the effects of the recession to date and the prospects for construction professionals as the economy starts to move into recovery mode. In addition, Experian was asked to collate responses supplied by professional institutions as to how they were assisting their members in 'recession mitigation'. Finally a brief examination of the longer-term influences on the nature of construction professionals' work was undertaken, drawing on previously published material. In tandem with the Experian research, a survey of construction professionals was commissioned to obtain responses from professional practices as to the effects of the recession on their business and how the downturn was impacting on employment, recruitment and training. IFF undertook 30 in-depth interviews with 30 professional practices in August and September 2009 and the results of these interviews informed a larger telephone survey of 301 firms undertaken in October 2009. Qualitative and quantitative survey with 17 employers in Northern Ireland. Please note low base size.	

Name	**Date**
ConstructionSkills Skills and Training in the Construction Industry, 2009.	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: Within Northern Ireland this entailed 85 employers and sole traders/self-employed	

Name	**Date**
ConstructionSkills, Construction Apprentices Survey,	2003
Aim/Objectives The aim of the survey was to determine critical data on learners, which will serve two main purposes as follows: ➢ To equip ConstructionSkills (previously CITB)with the information it requires for management, development and planning purposes in anticipation of meeting its	

requirements as Sector Skills Council for Government, the construction industry and education bodies.
- To furnish ConstructionSkills' (previously CITB's) Area Offices with information to contribute to the self-assessment reports and action plans required to meet the monitoring and inspection requirements of the ALI in England and Local Enterprise Companies in Scotland.

Methodology

A postal questionnaire survey of 5,224 new CITB construction trainees in England, Wales and Scotland was undertaken.

The questionnaire contained questions relating to:

- learners' background including their qualifications,
- the course and training programme they were following;
- learners' career choice and the main influences on this;
- learners' experience of the Construction Skills Learning Exercise, CITB and employer interviews;
- assessment of learners' needs;
- learners' views on their training programme and induction;
- advice and support that the learners were given regarding their future.

A total of 2,317 completed questionnaires were returned by the end of February, representing a response rate of 44 per cent.

Name	**Date**
ConstructionSkills Northern Ireland. Management and Supervisory Training Requirements of the Construction Industry in Northern Ireland,	2007

Aim/Objectives

Specific objectives of the research were to:

- Identify, quantify and analyse the size, scope and nature of the management and supervisory workforce in Northern Ireland.
- Examine current levels of management and supervisory training.
- Identify, quantify and analyse the skills needs of managers and supervisors.

Methodology

A total of 300 telephone interviews were conducted with employers in Northern Ireland. Operating within the traditional building sector (SIC45) and the Professional Services sector (SIC 74.2).

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