Sector Skills Assessment for the Construction Sector 2010

ConstructionSkills Wales Report

ConstructionSkills Insight

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1. Introduction

1.1 Background

ConstructionSkills is one of 23 Sector Skills Councils (SSCs) that have been licensed by the Government to tackle the skills and productivity needs of their sector throughout the UK.

ConstructionSkills is the Sector Skills Council for construction. As a partnership between CITB-ConstructionSkills, CITB-ConstructionSkills Northern Ireland and the Construction Industry Council (CIC), it is UK-wide and represents the whole industry from professional consultancies to major contractors and the SMEs in their supply chains.

As a SSC, ConstructionSkills has a remit to be the means by which employers can influence the supply of education and training and business support across the UK in order to:

- Improve sector performance and productivity
- Address skills gaps and shortages
- Provide greater opportunities for training and development
- Influence learning supply, including apprenticeships, higher education and National Occupational Standards (NOS)

Within this remit the overriding aim for ConstructionSkills is to ensure the training and learning infrastructures across the UK reflect the needs of the industry in terms of quantity, quality and location of training, mode of learning and funding mechanisms.

In order to fulfil this remit ConstructionSkills requires authoritative sector intelligence as to current and future skills needs based on a good understanding of the business and economic environment within which the industry is operating.

To this end ConstructionSkills holds and maintains a comprehensive suite of market intelligence.

This report brings together various research and analysis undertaken by ConstructionSkills during the past 12 months to provide an up-to-date assessment of skills within the construction sector.

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, following the framework set out in the UK Sector Skills Assessment for the Construction Sector report published in December 2010, covers the main findings for Wales. In addition to the Welsh report there are separate national reports for the English regions, Scotland and Northern Ireland. It is based upon research commissioned by ConstructionSkills and a comprehensive review of evidence that has been collated and analysed over the past year.

1.2 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.

1.3 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).

Bespoke Analysis

ConstructionSkills undertakes annual analysis of several official datasets such as the Labour Force Survey (LFS), Annual Business Inquiry (ABI), Annual Survey of Hours and Earnings (ASHE), British Household Panel Survey (BHPS), and Inter-Departmental Business Register (IDBR). The resultant data provides the foundation for understanding the size and composition of the sector as well as providing a basic insight into the characteristics of the sector in terms of business activities and working patterns.

A more usual requirement in relation to such externally sourced data will be to scrutinise it, checking whether it accords with industry views and to provide interpretation from ConstructionSkills' perspective of the sector.

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.

1.4 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 three key areas of supply relevant to the construction industry, namely education and training, skill levels, and flows into the industry.

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 and data from the various Employer Skills Surveys conducted within each of the home nations to present an assessment of skills needs and steps taken to address identified deficiencies.

Chapter 5 assesses the demand for new skills and changing patterns of employment, examining the main drivers for skills change in the construction industry over the next ten years, and what implications these may have for the types of skills that firms will need to operate successfully in 2020.

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.

1.5 Current and Future Skills Priorities

Industry Outlook

Construction remains an important sector that makes a vital contribution to social and economic activity within Wales and UK, underpinning growth and ambition. However, it has suffered as a result if the recession, particularly in respect of jobs and training. Whilst contractors have strived to retain skilled staff and preserve capacity for the upturn through reduced working hours or underemployment this means that significant excess capacity must be made up before future growth increases employment.

Unemployment has impacted all occupational groups, with continuing redundancies likely through 2011 and further jobs at risk as a result of public spending cuts. Evidence suggests that fewer employers are recruiting, construction vacancies have dropped sharply and work placements for apprentices and graduates are under threat.

Significant opportunities exist to improve competence and upskill the existing workforce, to increase productivity, reduce reliance on lower skilled or migrant workers, and support the uptake of new methods and specialist skills. Changes in skills needs are particularly relevant for management and professional occupations, with increasing demand for higher level skills.

Key Skills Issues

Risk to Industry Skills Base
Key skills lost through retirement and significant numbers leaving the industry due to the recession could undermine the long-term stability of the sector, reinforcing the need to keep promoting the sector to potential entrants.

Pressure on Youth Recruitment
Underemployment and the pool of unemployed workers will impact youth recruitment in an upturn. Firms cutting back on recruitment has created an oversupply of aspiring new entrants.

Focus on Higher Qualifications
Demand for higher level skills raises the qualifications bar and focuses attention on upskilling and the management training required to interface with other sectors and supply chains

Political Landscape

Recovery across the sector is still vulnerable to macro-economic factors with a gloomy forecast associated with recent UK Government spending cuts. Fears remain that the impact of austerity measures on major projects risks plunging the construction industry back into recession.

Cuts continue to impact the education sector, with reduced Higher Education funding potentially meaning less university students thereby risking damage to the economy.

The coming year will see UK Government skills reviews across the nations, focusing on a range of areas related to vocational qualifications and training, and particularly reflecting the contribution from a qualified workforce to economic prosperity and the need to equip workers with skills for the future.

The focus on apprenticeships and related level of investment has increased in support of both youth and adult recruitment. SSCs have been cited as playing a crucial role and ConstructionSkills remains at the leading edge of development and delivery.

The need for apprenticeships and training to be embedded as part of public procurement guidelines continues to be highlighted.

Key Skills Issues

Reduced Skills Funding
Reduced public funding for skills will impact the industry's investment in education and training, dampening a recovery in learner volumes.

Focus on Apprenticeships
Political attention focused on apprenticeships, increasing emphasis on recruitment and placements – highlighting the need for balance with upskilling and qualifying the existing workforce.

Government Skills Reviews
Key reviews of skills policy and education structures on the back of UK Government plans, the localism agenda in England and elections in the home nations.

Future Skills
Challenging targets have been set for carbon and waste reduction, impacting the outputs that are constructed, products and processes involved, and skills needed to respond.

Existing building stock represents considerable opportunities. The low carbon agenda has the potential to create a significant number of 'green jobs' post-recession, but will also require upskilling at all levels.

Specialist skills will be needed to meet the high specification and low energy requirements of future buildings and infrastructure. Offsite manufacturing has the potential to substantially increase as the industry moves from recession to recovery.

New ways of working will not always require new skills or create new jobs, but will often be in addition to or an amalgam of existing workers' skill sets. Increased multi-skilling is predicted.

Key Skills Issues

Changing Skill Sets
Modern methods requiring upskilling, re-skilling and multiskilling within the existing workforce.

Demand for Specialist Skills
Increased demand for specialist, technical and professional skills to meet high specification and low carbon requirements

Raising Awareness
A lack of clarity, particularly for SMEs, on the impact of green legislation, the skills required, and the provision available.

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.

ConstructionSkills has a leading role to play in unlocking the talent of individuals and improving the performance of construction firms and professional consultancies.

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

2.1 The Construction Sector and Workforce

2.1.1 Contribution of the Sector

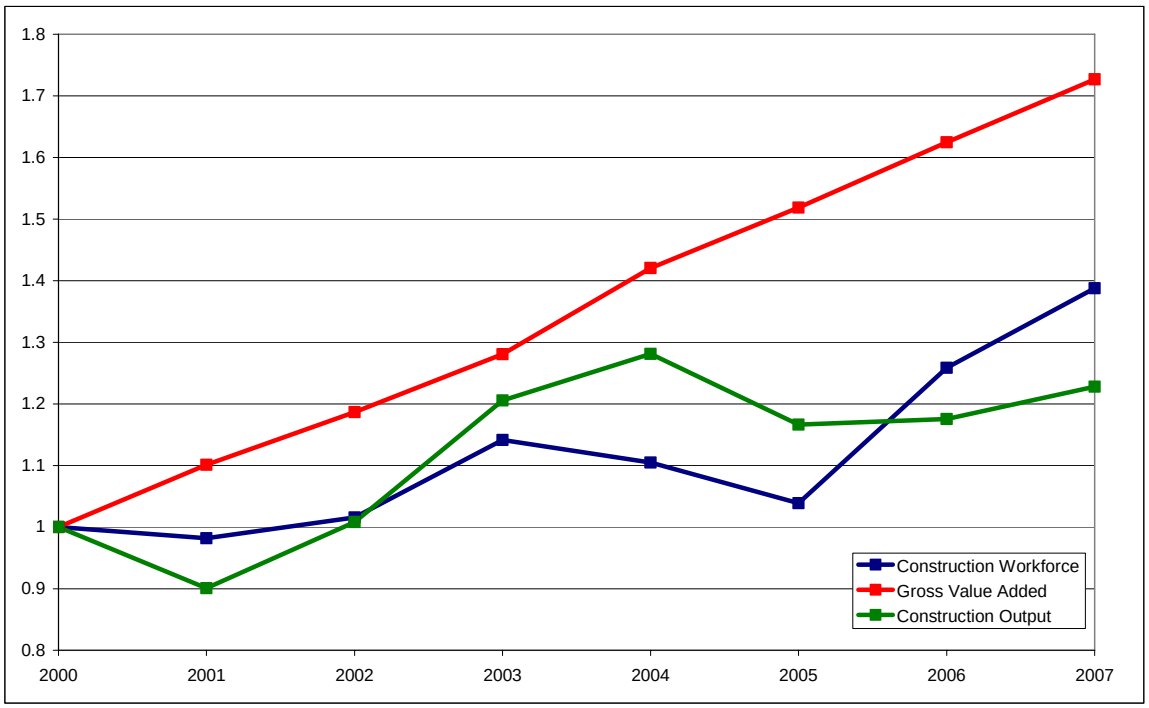
ConstructionSkills covers a wide range of activities in terms of the planning, design, construction and maintenance of the built environment.

Construction is a pre-requisite to all other economic activity and forms a significant part of the UK and Welsh economy in terms of employment and wealth generation.

At the UK level, the construction sector is the second largest employer and a significant exporter of goods and services. In the UK 2.17[1] million people are employed as both construction workers and professionals, accounting for over 7.5% of the UK workforce. With an output in 2009 of £98.6billion[2] (at constant 2005 prices) the sector contributes approximately 8% of the UK's Gross Domestic Product[3].

In Wales, 88,700[4] people are employed as both construction workers and professionals, accounting for 4.1% of the UK construction workforce. With an output in 2009 of £3.8 billion[5] (at constant 2005 prices) the sector contributes 3.9% of the UK construction output.

Chart 1 - Comparison of Construction Output, Gross Value Added and Workforce: Wales 2000-2007



Source: Office for National Statistics, Labour Force Survey; Construction Skills Network
Note Gross Value Added is only available to 2007

In Wales, the construction industry is, and has been for the last ten years, a leading employer (on average around 108,000 people). Overall from 2000 to 2007 the net employment trend for construction is positive, with slight dips in 2001, 2004, 2005 and from 2008 due to the current recession.

[1] Office for National Statistics, Labour Force Survey, Four quarter average to Spring 2010
[2] Office for National Statistics; Construction Skills Network; Experian 2010
[3] Office for National Statistics, United Kingdom National Accounts: The Blue Book 2010 edition, September 2010
[4] Office for National Statistics, Labour Force Survey, Four quarter average to Spring 2010
[5] ConstructionSkills Network and Experian, 2010

The fall in employment in the sector in Wales has been severe, with the number of workers falling by 34,100 from 2007 peak to 2010. Our latest forecast[6] is for continued although slowing decline until 2012 when employment is forecast to return to positive growth.

It's thought that the decrease in workers has not been as large as expected as contractors have made every effort to retain skilled staff wherever possible, in terms of preserving a degree of capacity in anticipation of the upturn. The severe skills shortages that followed the last recession have undoubtedly influenced the thinking of many contractors, although the issue going forward is how long contractors can continue to operate as they currently do under conditions of reduced demand and excess capacity.

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 large tail of small firms. In Wales there are approximately 14,235[7] construction enterprises[8] (3.9% of total UK enterprises). However, the vast majority of companies in the sector are small, with approximately 93% employing less than 10 employees. Less than 1% of sector businesses are large (employing more than 250 people), although these firms carry out a disproportionate share of the work by value.

Table 1 - Employment within ConstructionSkills' Footprint, Wales: 2009

Size of Enterprise (Number of Employees)	Enterprises		Employment	
	Number	Percent	Number	Percent
0-9	13,199	92.7%	29,801	52.4%
10-49	913	6.4%	17,610	31.0%
50-249	119	0.8%	9,482	16.7%
250+	5	0.0%	*	*
Total	**14,235**	**100.0%**	**56,894**	**100.0%**

Source: Office for National Statistics, UK Business - Activity, Size and Location 2010; Small Business Service Analytical Unit 2010; Office for National Statistics, Labour Force Survey 2010; ConstructionSkills.
Note: Analysis uses SIC 2007. Construction is defined by ConstructionSkills' footprint. This includes Architectural and engineering activities and other professional, scientific and technical activities. SIC 74.90/9 other professional, scientific and technical activities (not including environmental consultancy or quantity surveying) is included because analysis is unavailable below the 4 digit level. SIC 74.90/9 is not part of ConstructionSkills' footprint. Note * symbol indicates figures that are deemed to be disclosive and therefore not included in the original dataset.

Furthermore, in Wales 31,800[9] people working within the sector are self-employed. Whilst the numbers of self-employed within the sector has declined slightly over recent years, as the Inland Revenue has tightened up regulations related to self-employment status, they still represent well over a third (37% v 39% UK) of the available labour in the contracting sector. By comparison self-employment within the professional services sector is less widespread, accounting for about a quarter (27% v 23% UK) of the workforce and being very much focussed around the activities of architects and chartered surveyors.

The proportion of self-employment at national level in Wales (36%) is very comparable to England (38%) and Northern Ireland (42%). The exception being Scotland where only one in five (22%) of the workforce are self-employed. The United Kingdom report suggests the difference in Scotland may be related to the employment and training structure of Scotland, which promotes apprenticeships and the retention of trainees.

[6] ConstructionSkills and Experian, Construction Skills Network, 2010
[7] Office for National Statistics, UK Business - Activity, Size and Location 2010, September 2010
[8] Based on VAT trader and PAYE employer information
[9] Office for National Statistics, Labour Force Survey, Four quarter average to June 2010

Self-employment in Wales is particularly high in the main craft trades[10] where it averages 64% of the workforce (comparable to UK 64%, England 67%, Scotland 40% and Northern Ireland 59%).

It is also evident that age is a factor in terms of self-employment. Nearly a quarter (23% v 23% UK) of self-employed workers in Wales are aged 55+ compared to only 16% v 16% UK being employed directly. 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 retire 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 can often lead to a situation where all are all vying to employ the same ever-decreasing groups of trained people.

Uncertainty around future levels of work also means that employers are apprehensive about investment in the workforce and there is a fear that they would pay for training and then see their trainees go and work for rival firms, or set themselves up as sole traders. Long-term planning of construction investment, by clients including Government, is crucial in terms of providing a solid foundation for companies to maintain high levels of investment in the whole workforce. The introduction of framework agreements and public procurement requirements will be key to further developing a training culture.

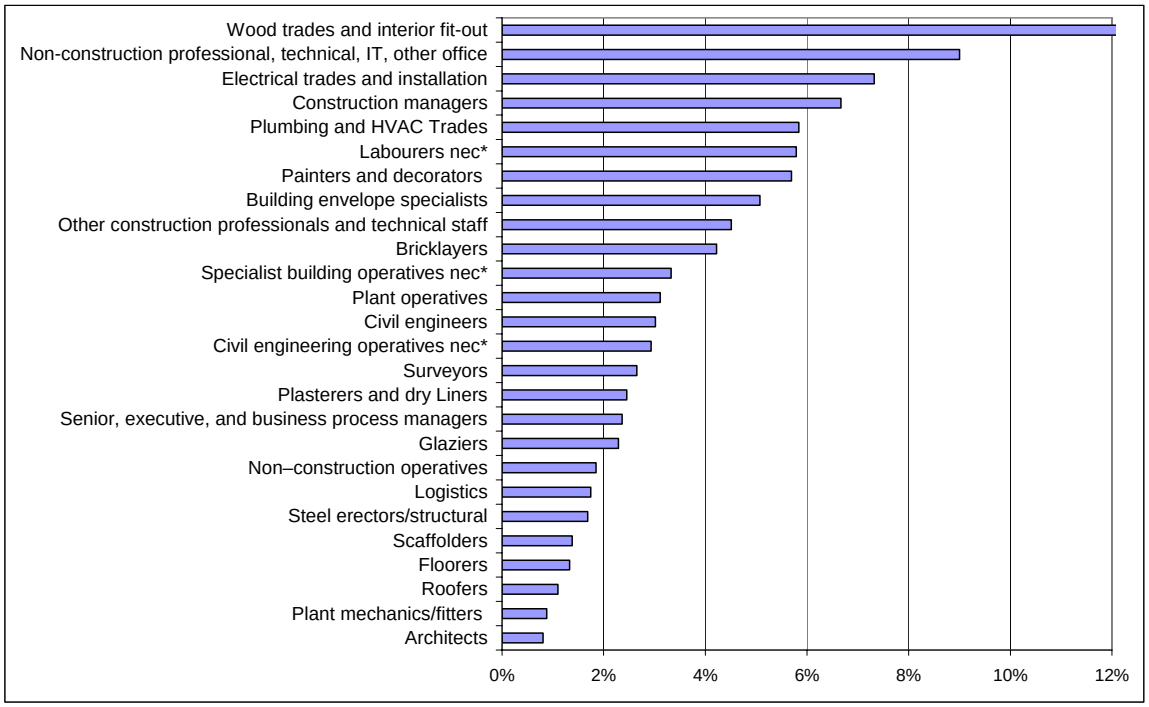
There is a strong tendency for career progression to lead towards self-employment, particularly in the main construction trades, where the financial rewards are perceived as being greater. In Wales, ConstructionSkills' research[11] shows that the incidence of self-employment rises from around one in four (25% v 20% UK) among people with 6 months to one years experience to around one in three (32% v 32% UK) among people with five or more years experience. 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 Wales, in terms of occupational structure, manual workers[12] dominate, representing 64% v 55% UK of the total workforce[13]. The remaining 36% v 45% UK are non-manual[14] workers, including managers, and all those working in the professional services sector. Patterns of full-time working remain dominant in the industry. Part-time employment is negligible. The following chart shows the proportion of employment by occupation in Wales.

[10] Main craft trades comprise Bricklayers, Painters and Decorators, Plasterers and Wood Trades.
[11] ConstructionSkills, Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007. Survey undertaken face to face with 3,877 construction workers across 312 sites distributed across UK and Republic of Ireland, within the overall sample 293 interviews across 21 sites were undertaken in Wales.
[12] Manual workers are defined as those working within SOC 2000 Major Groups 5, 8 and 9
[13] Office for National Statistics, Labour Force Survey, Four quarter average to Spring 2010
[14] Non-manual workers are defined as those working within SOC 2000 Major Groups 1, 2, 3, 4 and 7

Chart 2 - Construction Employment by Occupation, Wales: 2010



Source: Construction Skills Network Model; Experian

Overall, the picture of employment by occupation is similar to that of the UK. There are only very slight differences in the order of occupations, for example in Wales the occupation with greatest employment is wood trades and interior fit-out, whilst this is the second greatest in terms of employment in UK. Potentially, this may be a product of the current public sector investment in housing.

The construction sector is served by an itinerant workforce because of the project-by-project nature of the sector. This means that some construction projects – especially large-scale projects – will draw in significant numbers of workers, usually on a sub-contracted basis. Often these workers are likely to be from other parts of the country, or abroad.

Research[15] suggests construction workers in Wales are some of the most likely to be working in the region where they came from with more than four-fifths (87%) of them originally from the principality. Incoming workers were most likely to come from the neighbouring South West region (6% of the Wales workforce originated in the South West), the same region where Welsh workers working outside of Wales were most likely to work (6% of the South West workforce originated in Wales). Relatively few of those originally from Wales went outside of the region to work with just 16% doing so (compared with 31% of those from the West Midlands, the region that exported the highest proportion of native workers).

[15] ConstructionSkills, Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007. Survey undertaken face to face with 3,877 construction workers across 312 sites distributed across UK and Republic of Ireland, within the overall sample 293 interviews across 21 sites were undertaken in Wales.

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

	Wales 2007 %	Overall Workforce (UK/ROI) 2007%
All of it	39	43
Most of it	37	33
Around half	12	9
Small proportion	9	8
Only this job	1	3
Don't know	2	3

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

Note those working for national employers are somewhat more likely to be mobile and to have worked in other regions/areas, which no doubt reflects the fact that they will often be sent where the work is.

The mean number of miles travelled to work (distance from home to work) was 29, longer than the UK and Republic of Ireland (ROI) average of 24 miles. Approaching 3 in 5 (55% vs. 64% across the UK/ROI) of workers travel less than 25 miles. Workers in Wales were the least likely to travel less than five miles to work (10% vs. 24% across the UK/ROI). However, the proportion that travelled over 50 miles was similar to that for the overall workforce (9% in Wales vs. 10% across the UK/ROI). It is likely that the recession will result in increased levels of mobility and workers travelling further for work.

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 manual and non-manual occupations.

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

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

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

Furthermore, demographic changes related to more young people staying on in full-time education after the age of 16, and the imminent raising of the compulsory education leaving age in England (note the Education and Skills Bill would extend similar powers to Wales, although it will not be compulsory for the Welsh Assembly to adopt this) means it is unlikely that the age profile of the early 1990s will again be achieved and the industry will have to facilitate entry for older age and minority groups.

2.2 What Drives Skills Demand?

2.2.1 The Economy

This is the prime driver for change both in Wales and the UK across the sector. Economic stability is an absolute necessity in providing a sound basis for investment in construction activity whether at a national level in the delivery of hospitals, schools, roads and infrastructure, or at a household level in terms of the strong consumer confidence required to drive investment in housing, commerce and leisure.

Preliminary figures[16] released by the Office for National Statistics (ONS) indicate that in the wider UK economy there have now been four quarters of successive growth since Q3 2009. Overall, in the wider economy Gross Domestic Product increased by 2.8% in 2010 Q3 compared with 2009 Q3. According to this data the construction industry has been central to the wider economic recovery. The preliminary figures indicate that construction output rose by 4.0% during 2010 Q3, following an impressive 9.5% rise in 2010 Q2 and slight decline of -0.8% in 2010 Q1. Overall, construction output increased 11.0% over the period Q3 2010 to Q3 2009.

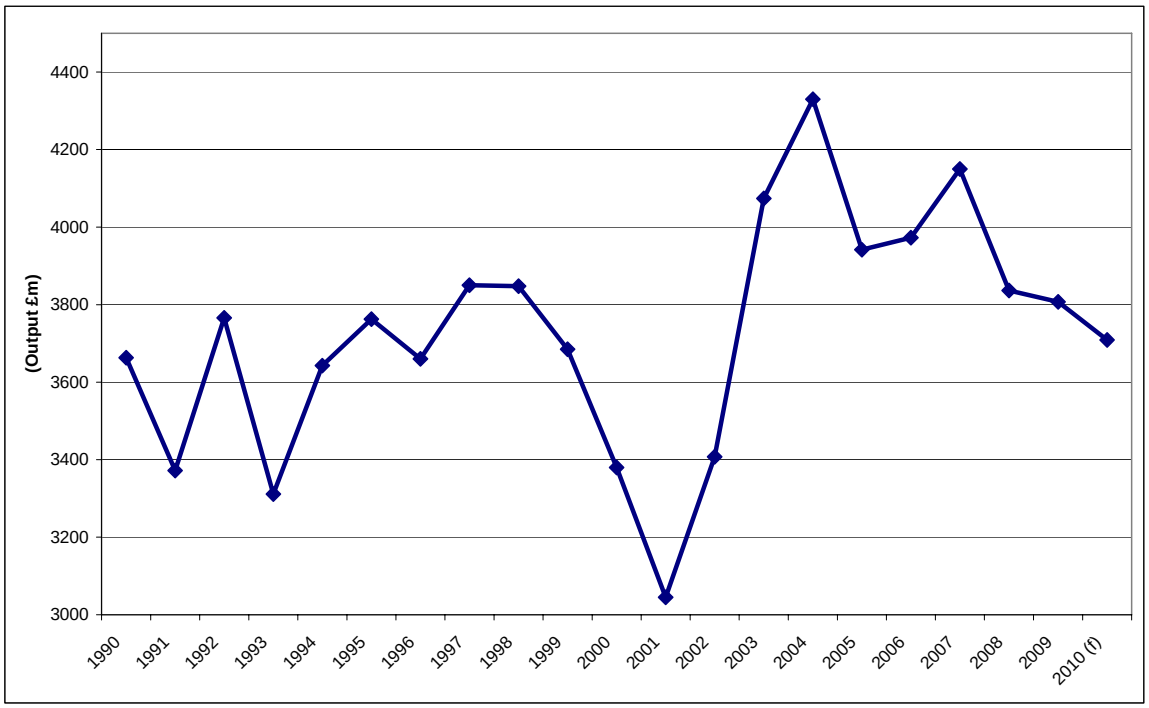
It's thought that extreme bad weather in Q1 2010 meant that work was delayed and this will have contributed to the strong growth figure in Q2 2010. According to the official dataset in the wider economy, allowing for the recovery in Q2 2010 following the bad weather at the start of the year, the underlying growth in Q3 2010 is broadly similar to that in Q2 2010. There are however, questions over the dataset as the construction growth figures in Q2 2010 and Q3 2010 take output back up to close to the level it was at the last 2007 peak[17]. It may be that revisions are made to the preliminary figures bringing the growth figures down.

The latest construction trade surveys[18] and evidence from ConstructionSkills own surveys including its recent October 2010 Employer Panel[19] indicate the construction industry is still suffering a torrid time. The recent publication of the Comprehensive Spending Review (CSR) [20] provides some outline details of spending plans, however, despite this great uncertainty remains in the construction sector. It's unclear if the economic recovery will be sustained in the longer term.

The impact of the recession on the construction sector in Wales has been nothing short of dramatic in terms of its impact on jobs and workloads. Following[21] two consecutive years of growth, total construction output in Wales declined by 8% to £3.8bn (in 2005 prices) in 2008, the lowest level since 2002. Output remained static in 2009 and is forecast to decline further in 2010 to £3.7bn (in 2005 prices). Whilst a downturn was expected on the back of the credit crisis the speed and depth of the contraction was without precedent. In this respect it has caught out a lot of businesses, particularly in terms of planning in the face of reduced workloads, late payments and increased competition.

[16] Office for National Statistics, Gross Domestic Product Preliminary Estimate, Statistical Bulletin Q3 2010
[17] ConstructionSkills and Experian, Construction Skills Network, 2010
[18] 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).
[19] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), October 2010 (Unpublished). A telephone survey of 1,511 employers and sole traders across UK construction industry complemented by 30 depth interviews, the sample included 95 employers in Wales.
[20] HM Treasury, Spending Review, October 2010
[21] ConstructionSkills and Experian, Construction Skills Network, 2010

Chart 3 - Construction Output in £m (2005 prices), Wales: 1990-2010



Source: Office for National Statistics, Labour Force Survey; ConstructionSkills Network; Experian
Note 2010 data is still forecast

Overall, in Wales the effect of the recession has resulted in reduced construction output in the short-term, although the medium to long-term forecast[22] is for growth of around 1.2% per year between 2011 and 2015, slightly higher than the UK rate of 1.0%.

The reduction in demand has lead to widespread redundancies across the sector.

In 2015, total construction employment in Wales is projected to reach 107,500 down on the 2008 outturn but around 9.8% up on the 2010 figure. The largest trade occupations in Wales in 2009 were wood trades and interior fit-out (16,070) and construction managers (7,800), with the former accounting for around 14% of total employment and the latter 7%. The greatest growth[23] between 2011 and 2015 is expected to be for labourers (10%), architects (10%) and civil engineering operatives nec* (8%) occupations.

The annual recruitment requirement[24] for 2011-2015 for Wales is projected to stand at around 4,680 with wood trades and interior fit-out (1,130) likely to be most in demand.

The CSR[25] published in October 2010 indicates that Wales will receive the biggest cuts in its budget in at least a generation. Overall, the budget[26] is facing a reduction of 0.8% per year in cash terms, or 3.1% per year in real terms. That means by 2014-15 the budget will be 12% lower in real terms than this year.

[22] ConstructionSkills and Experian, Construction Skills Network, 2010. Note the figures used here are based on revised model forecasts that follow the publication of the Comprehensive Spending Review and Draft Budget for Wales. It may be that further revisions are made to these forecasts as more data becomes available.
[23] ConstructionSkills and Experian, Construction Skills Network, 2010. Note figures by occupation at the time of writing have not been finalised and are likely to be revised down in light of revisions made to the model following the publication of the Comprehensive Spending Review and Draft Budget for Wales.
[24] ConstructionSkills and Experian, Construction Skills Network, 2010. Note the annual recruitment requirement at the time of writing has not been finalised and is likely to be revised down in light of revisions made to the model following the publication of the Comprehensive Spending Review and Draft Budget for Wales.
[25] HM Treasury, Spending Review, October 2010
[26] Figures and table from Welsh Assembly Government, Written statement following CSR, October 2010

Table 3 – Welsh Assembly Government Budget £m real terms

	£m – real terms				
	2010-11	**2011-12**	**2012-13**	**2013-14**	**2014-15**
Revenue	13,445	13,015	12,795	12,602	12,311
Capital	1,674	1,244	1,139	994	1,007
Total	15,119	14,259	13,934	13,597	13,318

Source: Welsh Assembly Government Written Statement following CSR

In a report published before the CSR by PriceWaterhouse Coopers[27] it was estimated that almost half a million UK private sector jobs could be lost by 2014/15 as result of public sector spending cuts due to the adverse impact on suppliers to the public sector. When combined with Office of Budget Responsibility estimates of falls in government employment levels, the report estimated around 950,000 people could lose their jobs by 2014/15 due to the direct and supply chain effects of the public sector cuts. In light of the actual outcome of the CSR these figures were revised upwards slightly. The updated estimates show that total job losses arising from the public sector spending cuts including knock-on effects on the private sector might amount to around 3.2% of total UK employment (around 925,000 jobs in absolute terms) by 2014/15.

In Wales the revised figures forecast that around 51,000 job losses, around 4.1% of total jobs in Wales will be lost by 2014/15. Although precise figures for the loss of construction jobs in Wales are not available the construction industry is expected to bare the brunt of job losses due to the greater exposure of the sector to cuts in public sector capital investment, which are going to be particularly severe.

According to a statement following the publication of the Welsh Assembly Government Draft Budget[28], the UK Government's cuts mean that the St Athan project – the biggest ever investment in Wales – will not now go ahead and no progress has been made with electrification of the London-Swansea rail line. This puts in doubt future funding and plans for S4C to become independent. There are concerns that the most vulnerable in Wales will bear the brunt of cuts in welfare benefits – an additional £7bn in cuts on top of the £11bn announced in June – and increases in VAT next year.

Despite deep cuts the Welsh Assembly Government draft budget[29] notes that they have protected investment in schools, skills and secondary and community healthcare and to maintain universal benefits, ensuring access to vital services and provision. The government remains committed to the One Wales programme (now in its fourth year).

Excluding inter-Departmental budget transfers, table 4 sets out the percentage change in the Departmental Expenditure Limits revenue budgets allocated to Main Expenditure Groups from 2010-11. These revenue budgets, which underpin public services in Wales, reduce by £137m or 1% between 2010-11 and 2011-12. Indicative plans for 2012-13 and 2013-14 show decreases of 0.1% and an increase of 0.6% respectively.

[27] PwC Public Sector Research Centre, 'Sectoral and regional impact of the fiscal squeeze', October 2010
[28] Figures and table from Welsh Assembly Government, Written statement following CSR, October 2010
[29] Welsh Assembly Government, Draft Budget 2011-2012, November 2010

Table 4 – Percentage Change in Revenue Departmental Expenditure Limits Budgets from 2010-14

MAIN EXPENDITURE GROUPS Revenue DEL Budgets	% Change 2010-11 to 2011-12	% Change 2011-12 to 2012-13	% Change 2012-13 to 2013-14	% Change Over 3 Years (Cash Terms)	% Change Over 3 Years (Real Terms)
Health & Social Services	0.0%	0.0%	0.2%	0.2%	-6.3%
Social Justice & Local Government	-1.7%	0.1%	1.1%	-0.6%	-7.1%
Economy & Transport	-1.3%	-0.9%	0.5%	-1.7%	-8.1%
Children, Education, Lifelong Learning & Skills	-1.2%	0.5%	1.4%	0.6%	-5.9%
Environment, Sustainability & Housing	-2.2%	-1.6%	0.4%	-3.3%	-9.6%
Rural affairs	-2.2%	-1.5%	0.4%	-3.3%	-9.7%
Heritage	-2.1%	-1.4%	0.5%	-3.0%	-9.4%
Public Services & Performance	-4.6%	-3.6%	-4.8%	-12.4%	-18.1%
Central Services &Administration	-4.6%	-3.3%	-4.6%	-11.9%	-17.7%
Assembly Government Departments	-1.0%	-0.1%	0.6%	-0.6%	-7.1%

Source: Welsh Assembly Government Draft Budget 2011-2012

Even before the Welsh Assembly Government budget announcements work was already underway to stimulate the economy in Wales. The Welsh Assembly Government published its new policy Economic renewal: a new direction in July 2010[30]. The new policy focuses on investing in infrastructure, research and development and growth industries to improve the conditions for business with the aim of creating jobs. One of the key components of the policy has been to restructure the Department for the Economy and Transport, which has led to an overall reduction of 280 staff and changes to the property portfolio.

In a recent article[31] following the draft budget it was reported that Ieuan Wyn Jones the Deputy First Minister and Minister for the Department for the Economy and Transport confirmed that despite reduced funding a pledge to introduce next generation broadband to all businesses throughout Wales by 2016 will be maintained. In the next financial year £16 million is available to invest in the six areas identified as having the greatest potential for the economy - Creative industries, ICT, Energy and Environment, Advanced material and manufacturing, Life Sciences and Financial and Professional services.

Key points from the Department of Economy & Transport's budget include:

- £16 million in 2011/12 for new investment in the six key sectors detailed above
- £13.7 million in 2011/12 to support entrepreneurship and support services for business
- £3 million a year for the Regional Priority Fund to provide funding for regionally important projects
- £8 million a year for direct support to university Research & Development projects
- More than £3.8 million a year to support Major Events
- Funds have been allocated to support ICT infrastructure and next generation broadband - £11 million 2011/12, £17 million 2012/13, £27 million 2013/14.

[30] Welsh Assembly Government, Economic Renewal: a new direction, July 2010
[31] Welsh Assembly Government Website, Wales Open for Business Despite Tough Times, http://wales.gov.uk/newsroom/businessandeconomy/2010/101119budget/?lang=en, November 2010

Combined with spending cuts there will in addition be tax rises[32] in 2011. Value Added Tax (VAT) will rise to 20% in January 2011. The UK government has also announced that the employee, employer and self-employed rates of National Insurance contributions (NICs) will increase by 0.5 per cent from April 2011. There are also plans to cut benefits and freeze public sector pay, all of which are likely to make consumers cautious about any spending plans.

Council budgets which were already under pressure before the CSR have been cut significantly further. These reductions have led to some councils outsourcing services as a means to cut costs. In September 2010 Suffolk County Council announced a plan[33] to outsource nearly all services, allowing it to cut its £1.1 billion budget by 30%. According to the details announced, the aim is to turn the authority from one which provides public services itself, to an enabling council which commissions other to carry out the services. It could eventually see the council's workforce slimmed down to just a few hundred people who would manage the contracts. Although there are of course quality concerns, the decision could be seen as a model for other councils to follow – Cardiff council was reported to be outsourcing contracts in January 2010[34].

These plans for outsourcing have implications for the construction sector, some major construction businesses have sought to diversify into other sectors to pick-up the significant contracts on offer either direct from councils or through sub-contracting. Although there is limited evidence as to the extent of diversification, there have been various reports in the press. For example, in May 2010[35] May Gurney were chosen as preferred bidder by Torbay Council for a range of outsourced council services, including maintenance and waste management. The contract, valued at up to £130m over an initial period of 10 years with possible extensions of a further 15 years, will be delivered through a new Joint Venture Company (JVC) between Torbay Council and May Gurney.

Despite this the reduction in demand has lead to widespread redundancies across the sector.

Data from the Office for National Statistics[36] on unemployment claimant counts by occupation in Wales, shown in Chart 4, illustrates the impact of the recession on the sector.

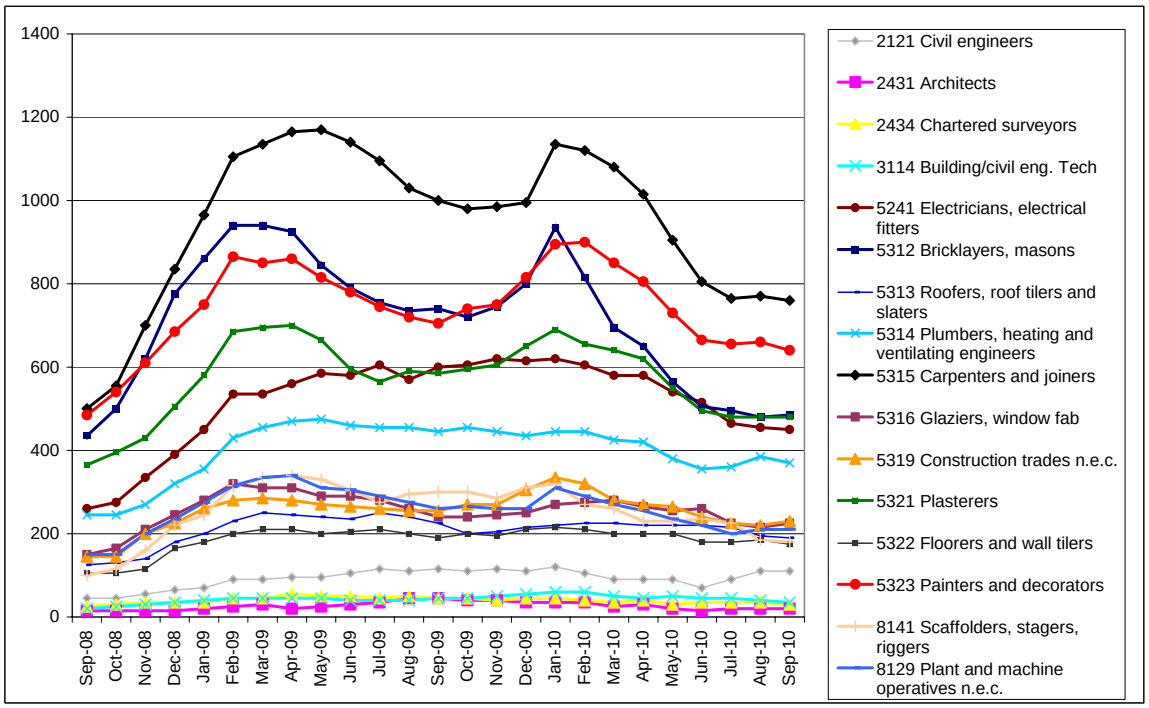
[32] HM Government website Directgov, http://www.direct.gov.uk/en/index.htm, October 2010
[33] BBC, Suffolk County Council to outsource most services, 23rd September 2010 http://www.bbc.co.uk/news/uk-11398678,

[34] Walesonline, Cardiff council presses ahead with outsourcing plan despite criticisms http://www.walesonline.co.uk/news/welsh-politics/welsh-politics-news/2010/01/15/cardiff-council-presses-ahead-with-outsourcing-plan-despite-criticisms-91466-25605395/, 15th January 2010

[35] The Construction Index, May Gurney awarded £130m Torbay Council outsourcing, http://www.theconstructionindex.co.uk/news/the-construction-index-news/May-Gurney-awarded-130m-Torbay-Council-outsourcing-deal , May 2010

[36] Office for National Statistics, Nomis, 2010

Chart 4 – Claimant Count by Occupation, Wales: Sep 2008 - Sep 2010



Source: Office for National Statistics, Labour Force Survey

The impact of the recession on the number of unemployment claimants in Wales can clearly be seen, with numbers rapidly increasing from September 2008 onwards. In terms of actual numbers of claimants the traditional trades of carpentry and joinery, bricklaying and painting and decorating have been hardest hit. These occupations employ more of the workforce, so would be expected to be worst hit in number terms. The picture of claimant occupations in Wales is similar to that in the UK.

According to recently conducted ConstructionSkills Employer Panel[37] research in Wales 34% (36% UK) of construction firms have laid off staff as a result for the recession. Redundancies have affected all occupational groups from the unskilled to managers and professionals.

Amongst construction firms bricklayers are the occupation most likely to have been made redundant (34% of companies that had laid staff off because of the recession), followed by painters and decorators (25%), electricians (15%) and labourers / general operatives (15%).

Encouragingly the survey in Wales indicates that the majority of firms are confident that they will ultimately survive the current recession: a third are very confident of survival (37% v 41% UK) and further just under half are fairly confident (46% v 14% UK).

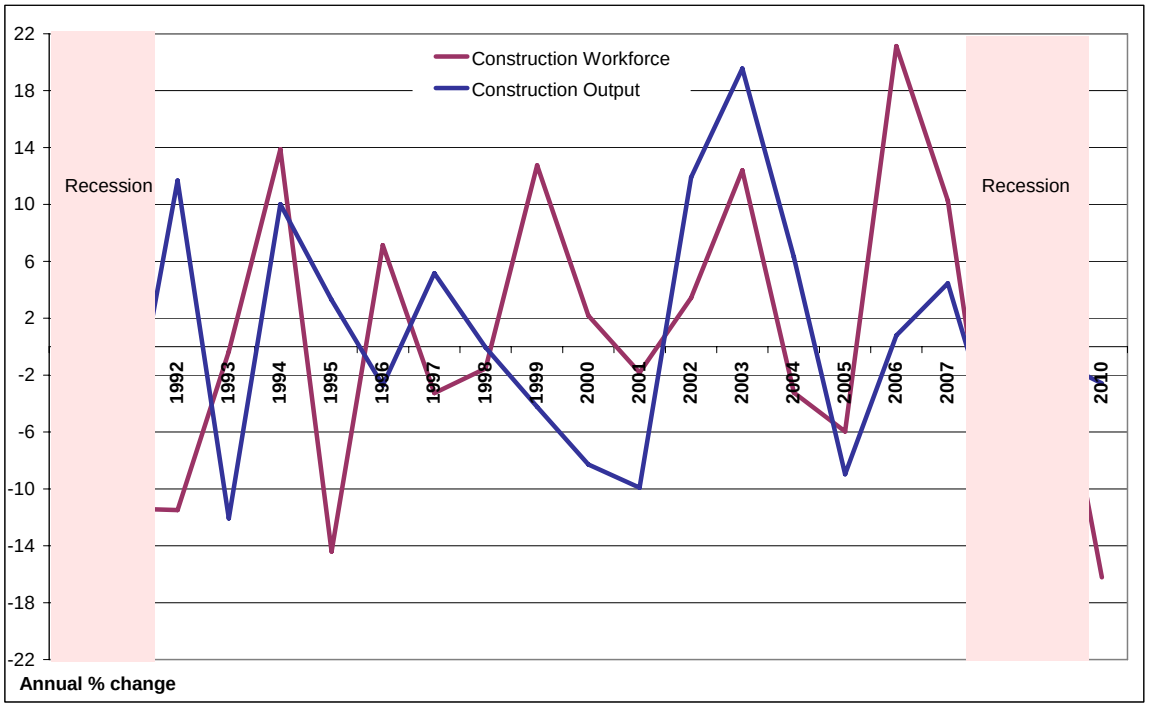
Certainly with evidence of recovery in the global economy attention is moving towards the exit path of recession. However, the sector emerges into a much changed social and economic landscape of high levels of unemployment, particularly amongst 18-24 year olds and low-skilled workers, reduced household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

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

[37] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), October 2010 (Unpublished). A telephone survey of 1,511 employers and sole traders across UK construction industry complemented by 30 depth interviews, the sample included 95 employers in Wales.

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.

Chart 5 - Construction Output and Employment, Wales: 1990-2010



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

The chart clearly shows that construction employment lags behind output. Following the slump of the early-1990s it took several years for employment growth to catch-up with that of output. Whilst economic recovery is forecast over the next five years it is highly likely that employment levels will lag and similar patterns will re-occur.

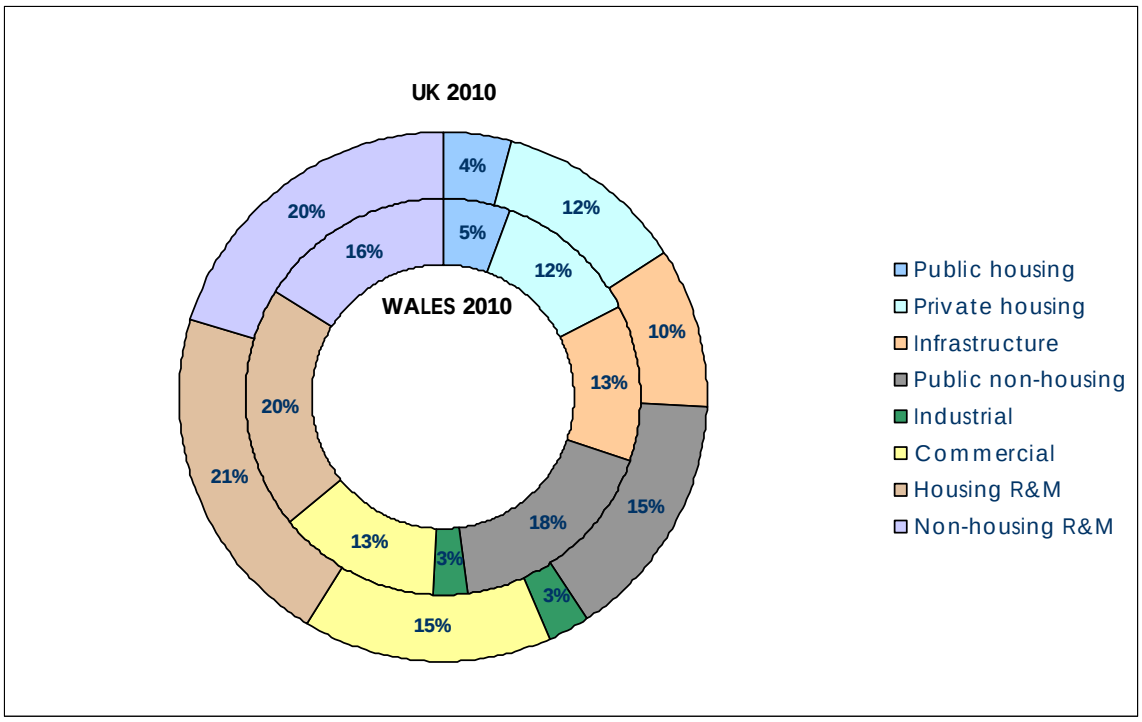
The exodus of skilled workers from the industry through redundancy and retirement will also impact on the ability of the industry to transfer knowledge from experienced workers, potentially further hindering long-term growth.

2.2.2 Current Activity

Chart 6 illustrates the sector breakdown of construction in Wales compared to that in the UK. Effectively the percentages for each sector illustrate the proportion of total output each sector accounts for.

In terms of the structure of the Welsh construction industry compared to the UK the largest difference is the size of non-housing Repair and Maintenance market. Wales' non-housing Repair and Maintenance market accounts for 16%, smaller than the UK 20%. Otherwise, the structure of the industry is broadly in line with that of the UK.

Chart 6 - Construction Industry Structure by Main Sub-sector (Constant 2005 Prices), United Kingdom v Wales: 2010



Source: ConstructionSkills Network; Experian

In 2008[38], Gross Value Added (GVA) in Wales was estimated to be worth around £45.6 billion in current prices, around 3.5% of the UK total.

The largest components[39] of the Welsh economy are real estate, renting and business activities 18.6% of Gross Value Added (GVA) and manufacturing (17.9% GVA). The construction sector accounts for 7.1% of GVA in Wales, similar to the UK proportion of 6.6%.

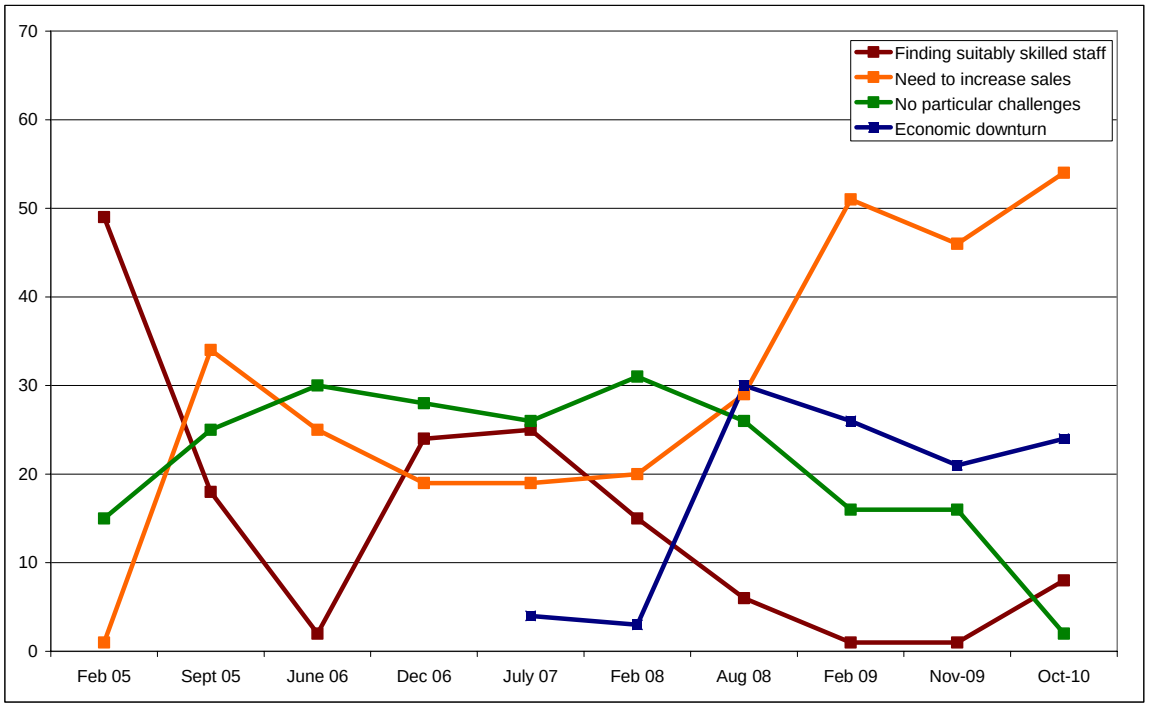
The greatest growth in proportion has been in real estate, renting and business activities which has increased by 3.1% from 2000 to 2007, whilst in contrast manufacturing has fallen by 5.7% over the same period. Construction has increased by 1.4% over the same period.

2.2.3 Constraints on Activity

ConstructionSkills' Employer Panel[40] asks Employers without prompting what their key business challenges are. This question in the survey, running since 2005, provides a useful barometer of activity constraints Employers are facing. Data from Wales is provided in the following chart.

[38] Office for National Statistics, Regional Gross Value Added, 2009
[39] Note data by component is only available to 2007
[40] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), October 2010 (Unpublished). A telephone survey of 1,511 employers and sole traders across UK construction industry complemented by 30 depth interviews, the sample included 95 employers in Wales.

Chart 7 – Key Business Challenges, Wales: 2005 - 2010



Source: Construction Employer Panel

The picture of challenges in Wales is very similar to the UK trend. As the chart shows, the economic downturn first appears as a key business challenge in July 2007, declining in February 2008 but then rapidly rising in August 2008 to being mentioned by 30% of respondents. It is interesting that the proportion answering this increased slightly in the most recent October 2010 survey, perhaps reflecting uncertainty in the economy.

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The importance of finding suitably qualified staff declined from the key business challenge mentioned in February 2005 to a low of 1% of employers in November 2009, it has now increased back to 8% slightly above the August 2008 level of 6%.

It is interesting that responding to sustainability / green issues was not mentioned as a key business challenge in Wales or the UK. Section 2.2.8 provides details of the sustainability agenda in Wales, including the introduction of challenging zero carbon targets ahead of England and devolution of building regulations to Wales. It's likely that this sustainability agenda will require change for Employers but the survey indicates that at present this is not top of mind as a key challenge for Employers.

In Wales, the most mentioned challenge is the need to increase sales, mentioned by 54% of respondents in the last October 2010 wave. This data indicates that the construction sector, as with other sectors has become even more competitive. There has been much press coverage regarding firms in the construction sector reducing profit margins to win work. Mixed evidence of economic recovery might suggest that the need to increase sales is likely to remain a key priority for the next few years at least.

There is further evidence at UK level that supports the findings of the Employer Panel. At UK level, as might be expected with the recession the proportion of firms reporting lack of demand has increased significantly since October 2007, affecting on average 45%[41] of firms across the period. As demand has tailed off this has created excess capacity and all but removed labour constraints, which now affect only 0% to 1% of firms.

[41] Construction Forecasting and Research, Experian, August 2010

In contrast to this, results from the Federation of Master Builders State of Trade survey for the third quarter 2010[42] indicate that although employment continues to fall some skill shortages remain. There were difficulties reported recruiting supervisors (11% respondents), site managers (8%), electricians (7%) and plumbers & HVAC trades (7%).

Other constraints on the industry in both Wales and the UK include bad weather, for example the recent January 2010 adverse winter weather, January 2009 winter weather, 2000/01 winter weather and August 2008 wet summer.

2.2.4 Globalisation

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

The worldwide decline in construction activity has most notably impacted on UK and Welsh professional services, and has been particularly visible in 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 have been hit particularly hard during the recession.

In response to the recession, the Welsh Assembly Government launched ProAct[43], a financial support scheme designed to help viable businesses cope with the downturn. The scheme provided funding for training of employees who were on short time working, and helped companies retain skilled staff who might otherwise be made redundant. The scheme, initially available for 12 months until March 2010 but then extended to end June 2010, was available to businesses that had introduced short time working and faced the threat of making redundancies, broadly it offered up to £2,000 per individual towards training costs. The scheme was well received, as reported in a newspaper article ProAct[44] has now committed more than £23.2 million to companies and training providers across Wales to support more than 9000 people from more than 200 companies. It may be that without this positive, proactive approach, the impact of the recession in Wales may have been much worse.

ConstructionSkills' carried out research[45] amongst professional practices in the UK and Wales. It should be noted that the survey sample for Wales was small, including 13 professional practices, the data is therefore most reliable at UK level and Welsh data should be viewed as indicative only. The research indicated that the fee income of over two thirds of the companies (69% v 54% UK) surveyed was lower in the previous 12 months compared with the 12 months before that, compared with 0 firms in Wales and one in nine (11%) UK saying it had increased over the same periods.

According to the survey, in Wales just over half of employers (62% v 46% UK) had also made redundancies because of the recession. These redundancies affected a wide range of occupational groups. Using UK data (in Wales 8 employers had made redundancies) of those companies making redundancies, most often they were administrative positions (35% of employers that had made redundancies had laid such staff off), but it was also quite common for employers to have laid off technicians (15%), architects (14%), project managers (9%) and mechanical, civil and other engineers (8%, 6% and 18% respectively). Of the 13 employers in Wales, 8 (62%) had made

[42] Federation Master Builders, State of Trade Survey Q3 2010, 2010
[43] Welsh Assembly Government, ProAct, 2009

[44] Walesonline, Welsh Assembly Government's ProAct-ive approach is helping business and saving jobs, http://www.walesonline.co.uk/advertorial/proact/2010/05/26/welsh-assembly-government-s-proact-ive-approach-is-helping-businesses-and-saving-jobs-91466-26529213/ , published May 2010

[45] ConstructionSkills and Construction Industry Council, Impact of the Recession on Construction Professionals, 2009 Unpublished, Telephone survey with Professional services firms; initial qualitative phase involving 30 firms followed by quantitative phase with 301 firms, the survey included 13 interviews with employers in Wales note low base size.

redundancies because of the recession. Of these 8 employers making redundancies, 3 had made Administrative staff redundant, 3 technicians, 1 architects, 1 mechanical engineers, 1 civil engineers and 4 other engineers. Although the sample is small, the pattern of redundancies in Wales appears similar to the UK.

As well as exporting skills and expertise the UK and Welsh 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/Welsh labour market and UK/Welsh 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 globalising world, itinerant construction workers come from all over Europe and beyond.

Until the 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.

Table 5 - First Degree Built Environment Student Enrolments Wales, United Kingdom Domiciled and Non-United Kingdom Domiciled: 2008/09 and 2007/08

	2008/09				2007/08			
Subject	**Total**	**UK Dom**	**Non-UK Dom**	**%Non-UK Dom**	**Total**	**UK Dom**	**Non-UK Dom**	**%Non-UK Dom**
Civil Engineering	360	230	130	36%	305	240	65	21%
Architecture	185	150	35	19%	180	155	25	14%
Building	145	130	10	7%	125	115	10	8%
Planning (urban, rural & regional)	120	120	5	4%	110	105	5	5%
Total	810	630	180	22%	720	615	105	15%

Source: Higher Education Statistics Authority (HESA) 2010

Data from the Higher Education Statistics Authority (HESA) shows that a high proportion of course enrolments in Wales in 2008/09 are from Non-UK Domiciled students. Proportions are highest for Civil Engineering and Architecture courses at 36% v 28% UK

and 19% v 21% UK of students respectively, with an overall proportion of 22% v 18% UK.

From 2007/08 to 2008/09 in Wales there has been a strong increase (7%) in the total number of Non-UK Domiciled student enrolments. This growth is due mostly to increases in civil engineering and architecture course enrolments (65 to 130 and 25 to 35 respectively).

The UK Sector Sectors Skills Assessment report suggested a number of reasons to explain why Non-UK Domiciled workers might wish to undertake training in the UK – due to the high-quality of training on offer; close association of UK courses to associated professional bodies such as the Institute of Civil Engineering (ICE); prospect of UK jobs offering higher wages; or the benefits of learning a foreign language. These factors will all assist the global appeal of both the UK and Welsh higher education sectors. It is important to capitalise on these factors to ensure future standards of built environment higher education are both maintained and enhanced.

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. For the past two decades, the need to improve business productivity has been the major driver for industry change and innovation. However, the drive towards sustainable construction and reducing carbon emissions is exerting more influence than ever on industry, and legislation underpinning this drive will have to be met through a step change in many areas of construction activity. In Wales, sustainability has become central to Welsh Assembly Government policy with challenging targets around zero carbon and waste introduced alongside new funding streams.

Section 2.2.8 provides more detail around sustainability and implications for the construction industry. In order to achieve the targets set out it will be important for the construction industry both within Wales and at UK level to develop and embrace new technology and innovate. New funding streams in Wales, will help speed the adoption of new technology, creating exciting opportunities for the construction industry. As detailed in section 2.2.1 the plan is for next generation broadband to be available to all businesses in Wales by 2016.

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

The recession has shaken a lot of firms out of the sector and some companies will use this as an opportunity to reorganise and innovate. Levels of competition have increased significantly, margins have been reduced and diversification is rife as competition for work intensifies. This has resulted in firms looking to generate the maximum return on all potential projects, producing an opening for technological and process change.

In Wales[46] just over (34% v 36% UK) questioned in ConstructionSkills' Employer Panel had laid staff off because of the recession with one in five (21% v 26% UK) changing the focus of their work on different parts of the market in response to the recession. These figures may be lower in Wales due to intervention by Welsh Assembly Government, with schemes such as ProAct (detailed in the previous section). Firms that had expanded into

[46] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), October 2010 (Unpublished). A telephone survey of 1,511 employers and sole traders across UK construction industry complemented by 30 depth interviews, the sample included 95 employers in Wales.

different parts of the market or changed the focus of their work reported requiring new skills, particularly in IT and management.

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

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 Welsh population is projected to increase by 139,000[47] by 2018. This increase is equivalent to an annual average rate of growth of 0.5% per annum (slightly lower than the UK rate of 0.7%). If past trends continue, the Welsh population will continue to grow, reaching greater than 3.3 million by 2033. This is due to both natural increase (more births than deaths) and because it is assumed there will be more immigrants than emigrants (a net inward flow of migrants). These factors together with increasing rates of household formation will drive demand for homes and public services.

Population growth combined with changing cultural and socio-economic conditions, including strong aspirations of home ownership, higher rates of divorce and a marked increase in single-parent families means that one person households are projected to equate to approximately two thirds[48] of the annual increase in households. According to Welsh Assembly Government data[49] there will be an average increase in Welsh households of 14,000 per annum over the next decade.

Wales, like the rest of the UK and 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.

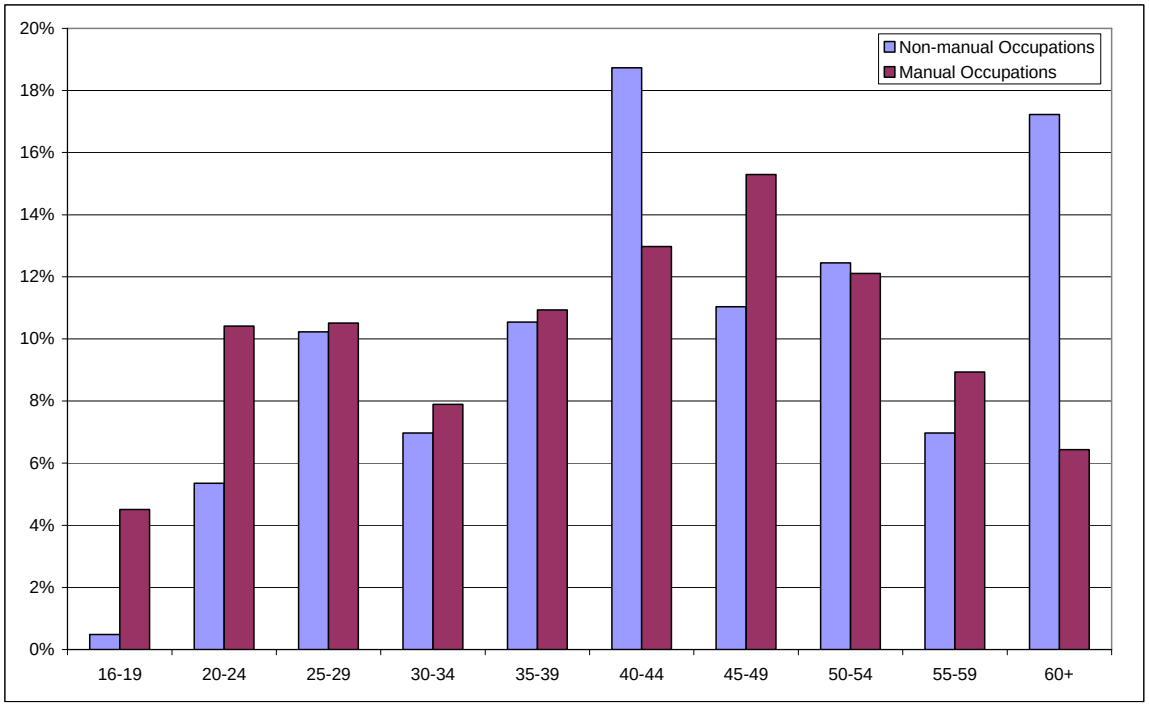
The age profile[50] of the construction industry in Wales for both professionals and contractors alike matches that of many other UK industries. It is mature, ageing and has undergone significant change over the past 10 years. For professionals, managerial and

[47] Office for National Statistics, Population Projections, 2008

[48] Welsh Assembly Government, Household Projections for Wales to 2031, June 2009
[49] Welsh Assembly Government, Household Projections for Wales to 2031, June 2009
[50] Office for National Statistics, Labour Force Survey, Four quarter average to Spring 2010

manual occupations, the workforce has generally been distinguished by a decline in the share of the younger groups in total employment and a rise in those aged 45 years and over. Despite positive efforts to encourage young persons to consider construction as a desirable career choice at every level, the industry has an age profile that is biased towards the 35-54 age groups.

Chart 8 - Age Profile of Construction Industry, Wales 2010



Source: Office for National Statistics, Labour Force Survey 2010

Due to the recession the current construction workforce in Wales is now slightly smaller than 2003 (approximately 8,100 less). Over the same period the UK workforce has increased (99,300). However, the proportion of older workers (aged 55 years and over) has increased in Wales (from 13% to 19% v UK 15% to UK 17%) over the same period. Similarly, the proportion aged 24 and under has fallen in Wales (18% to 13% v 14% UK to 12% UK).

While the increasing age profile is most pronounced in the manual workforce, professional trades such as architecture, mechanical and civil engineering could also lose 33% v 18% UK of their manpower to retirement in the next ten years.

The under-representation of women and ethnic minorities remains a priority issue for the industry in both Wales and the UK.

Labour force statistics show that marginal improvements are being made in recruitment from the female and black, minority and ethnic (BME) groups, although when compared with the Welsh workforce as a whole, the sector remains amongst the most gender imbalanced in the Welsh economy.

Currently in Wales, women account for approximately 10%[51] of total employment in the sector. This figure is slightly lower, with the exception of Northern Ireland, than the proportion of women in total employment in the sector across the UK (13%), England (13%), Scotland (11%) and Northern Ireland (2%).

In Wales, nine in ten (90%) women in construction work in non-manual or off-site roles, with 10% employed in manual trades. The proportion of women in non-manual work is

[51] Office for National Statistics, Labour Force Survey, Four quarter average to Spring 2010

slightly below the other UK nations with the exception of Scotland where it is similar, UK (93%), England (94%), Scotland (89%) and Northern Ireland (98%).

The proportion of BMEs in construction employment in Wales has remained static between 2005 and 2010 (both 1 % v UK 3% and 4% respectively). These figures compare poorly with the wider working population 3% v 9% UK. Looking at the split between manual and non-manual occupations, BMEs currently account for under 1% v 4% UK (note numbers in Wales are too small here to be statistically reliable) of all manuals, and 2% v 5% of all non-manuals.

The overall proportion of BMEs in construction employment in Wales (1%) is slightly lower (except Northern Ireland) than other UK nations, UK (4%), England (5%), Scotland (2%) and Northern Ireland (1%). As might be expected the UK areas with the highest proportions of BMEs in the construction sector workforce coincide with the regions containing areas with higher levels of ethnic diversity. Even in areas which show a higher proportion of BME workers such as London (17%) and the West Midlands (6%) are below the all industry average for all sectors in these regions (31% and 12% respectively).

For both women and BMEs the representation amongst professional and office-based roles is clearly higher than that for manual workers and highlights the challenge in terms of increasing the participation of these groups in manual and site-based roles.

The ageing workforce also poses a problem with regards training capacity. A longstanding trend towards early retirement, together with reported difficulties in the recruitment of teaching staff, means that questions must be asked not only as to whether the current training capacity is able to cope with the expected intake of prospective trainees, but also who will train the trainers of the future.

2.2.7 Legislation

Legislation remains a key driver for change across both industry sectors as a whole and within the construction sector specifically. It is interesting that within the UK construction sector the Government is doubly important as both a legislator and as a major client. There is a balance to this relationship, since without a strong and effective construction industry the Government will not be able to fulfil its electoral obligations. UK Government has historically driven 30-40% of construction output[52].

It is important to note that legislation operates at three levels – international, national and regional/local level. The UK report focussed on legislation relating to England and although this may influence what happens in Wales, this report focuses on specific legislation relating to Wales. In order to understand how legislation is passed in Wales it is useful to briefly review devolution history[53].

The establishment of the Welsh Office in 1964 effectively created the basis for the territorial governance of Wales. The Royal Commission on the Constitution (the Kilbrandon Commission) was set up in 1969 by Harold Wilson's Labour Government to investigate the possibility of devolution for Scotland and Wales. Its recommendations formed the basis of the 1974 White Paper Democracy and Devolution: proposals for Scotland and Wales, which proposed the creation of a Welsh Assembly. However, voters rejected the proposals by a majority of four to one in a referendum held in 1979.

After the 1997 general election, the new Labour Government argued that an Assembly would be more democratically accountable than the Welsh Office. A second referendum was held on 18 September 1997 in which voters approved the creation of the National Assembly for Wales by a majority of just 6,712 votes. The following year the

[52] L.E.K. Consulting, Construction in the UK Economy, www.cbi.org.uk/lekreport , 2009
[53] Adapted from Wikipedia, 2010

Government of Wales Act was passed by Parliament, allowing for the creation of the first National Assembly for Wales.

A revision to this act, The Government of Wales Act 2006 received Royal Assent on 25 July 2006. It confers on the Assembly legislative powers similar to other devolved legislatures through the ability to pass Assembly Measures, although legislative competence orders are still subject to the veto of the Secretary of State for Wales, House of Commons or House of Lords.

The Welsh Assembly Government[54] website notes that the Government of Wales Act 2006 enabled the Welsh Assembly Government to bring forward its own programme of legislation, which is made up of:

- Assembly Measures
- Legislative Competence Orders

The website notes Assembly Measures can broadly do anything an Act of Parliament can in relation to Wales, subject to the limitation defined by Government of Wales Act 2006. Legislative Competence Orders (LCO) give the 60 elected members of the National Assembly for Wales the power to consider and pass Assembly Measures in certain subject areas. This means that passing an LCO does not alter the law but if passed they give the National Assembly the power to consider altering the law using Assembly Measures.

In addition the following legislative vehicles allow policies to be taken forward:

- Subordinate Legislation
- Transfer of Functions Orders
- UK Parliamentary Bills.

Legislation put forward by the Welsh Assembly Government is subject to scrutiny and approval by the National Assembly for Wales. Currently the National Assembly does not have full law making powers. However, there is a referendum[55] on the future legislative powers of the National Assembly for Wales planned for 3 March 2011. Also, on 5th May 2011 there will be a National Assembly election and on the same day a vote on whether MPs at Westminster should be elected through a more proportional system of voting.

In June 2007[56] the First Legislative Competence Order (LCO) relating to Education and Training (Additional Learning Needs) was published. In April 2008 the 'One Wales Delivery Plan' was launched, identifying 228 specific delivery commitments from the One Wales document.

Key Assembly Measures[57] include:

- **Learning and Skills (Wales) Measure 2009**; The key purpose of this Measure is to create a right for learners aged 14-19 in Wales to elect to follow a course of study from a local area curriculum, known already in 14-19 Learning Networks as an ‘Options Menu’.

- **Learner Travel (Wales) Measure 2008**; The Measure relates to the travel of school pupils and young people in education or training aged 16-19 in Wales. The Measure will increase entitlement to free transport to school for primary school children if they live two miles or further away; require local authorities and the Welsh Ministers, when exercising their functions under the Measure, to

[54] Welsh Assembly Government Website, 2010
[55] National Assembly for Wales Website, 2010
[56] Welsh Assembly Government Website, 2010
[57] National Assembly for Wales Website, 2010

promote access to Welsh medium education; and give local authorities the power to change school session times if that can improve transport arrangements or environmental sustainability.

- **Local Government (Wales) Measure 2009**; The Measure's overall intention is to offer authorities greater flexibility to respond to citizen and community needs with a national context; create a statutory regime which better integrates long-term strategic planning and shorter term service improvement; and, amend the law better to reflect the distinctive nature and role of local government in Wales.

- **Waste (Wales) Measure 2010;** The measure makes provision to reduce the amount of waste and litter in Wales and contribute to the development of more effective waste management arrangements in Wales. The measure was passed by the Assembly on 2nd November 2010 and awaits Royal Approval.

Key Legislative Competence Orders[58] relating to Construction and the Built Environment include:

- **The National Assembly for Wales (Legislative Competence) (Education and Training) Order 2008;** enable changes to be made by way of Assembly Measure, in relation to any aspect of the organisation and delivery of Special Education Needs in Wales.

- **The National Assembly for Wales (Legislative Competence) (Housing and Local Government) Order 2010**; The proposed LCO would extend the field of legislative competence in relation to housing and local government. The competence within the LCO would cover the regulation of social landlords, disposals by social landlords, social housing tenancies, homelessness, housing allocations, housing-related support, the provision of Gypsy and Traveller sites, empty homes and Council Tax for second homes.

- **The National Assembly for Wales (Legislative Competence) (Environment) Order 2010**; New powers in this field will enable the Welsh Assembly Government to bring forward proposals for Measures with the aim of creating sustainable communities. Three specific areas in which these powers will be used are: improving local environmental quality, increasing recycling and improving waste management; and strengthening pollution controls.

- **The National Assembly for Wales (Legislative Competence) (Transport) Order 2010**; To extend the legislative competence of the National Assembly for Wales to make new laws for Wales by Measure in relation to learner transport and concessionary travel

In addition to the legislation mentioned here there are specific legislation and policy initiatives in Wales relating to climate change, sustainability and zero carbon. These are detailed in the sustainability (next) section of the report.

2.2.8 Sustainability

The Government of Wales Act 2006, mentioned in the previous section, places the promotion of sustainable development at the heart of the Welsh Assembly Government's work. When the current coalition government in Wales was formed in 2007 the two parties published One Wales, a progressive agenda for the government of Wales[59] – setting out strategies and aspirations for a comprehensive programme of government over the full four year term.

[58] National Assembly for Wales Website, 2010
[59] Welsh Assembly Government, One Wales, A progressive agenda for the government of Wales, 2007

Building on the One Wales agenda, following consultation, the Welsh Assembly Government published One Wales : One Planet, The Sustainable Development Scheme of the Welsh Assembly Government[60], setting out a vision for a Sustainable Wales. This scheme comprises an overarching strategy for Wales under which lies other strategies including the Climate Change Strategy[61], Green Jobs Strategy[62] and Zero Waste Strategy[63]. In addition A Low Carbon Revolution[64] sets out the Assembly Governments ambitions for low carbon energy in Wales identifying the potential for further renewable energy in Wales.

The Welsh Assembly Government has recently published[65] its 2009-2010 annual report for the sustainable development scheme. The report details that good progress has been made against the One Wales : One Planet scheme but there also remains much to do, further it notes that this report will be the last one published in this Assembly-term. The report therefore recommends that after May 2011, action is taken to ensure sustainable development is the means for delivery for the new Programme for Government.

It's useful to briefly review the objectives set out in the sustainable development scheme[66], the Welsh Assembly Government proposes that:
'Within the lifetime of a generation we want to see Wales using only its fair share of the earth's resources, and where our ecological footprint is reduced to the global average availability of resources – 1.88 global hectares per person. To achieve this goal over a generation, we will need to reduce by two thirds the total resources we currently use to sustain our lifestyles'. This is summarised by the principle One Wales : One planet as we are currently using three planets worth of resources, instead of the one available to us.

The strategy[67] to meet this aspiration has 4 themes covering issues that underpin the approach to reducing the ecological footprint, and 4 themes based on the policy areas that contribute most to Wales' ecological footprint:

[60] Welsh Assembly Government , One Wales : One Planet, The Sustainable Development Scheme of the Welsh Assembly Government, May 2009
[61] Welsh Assembly Government, Climate Change Strategy, October 2010
[62] Welsh Assembly Government, Green Jobs Strategy, Capturing the Potential, 2009
[63] Welsh Assembly Government, Zero Waste Strategy, Towards Zero Waste, June 2010
[64] Welsh Assembly Government, A Low Carbon Revolution – Energy Policy Statement, March 2010
[65] Welsh Assembly Government , One Wales : One Planet, The Sustainable Development Scheme Annual Report, September 2010
[66] Welsh Assembly Government, One Wales : One Planet, The Sustainable Development Scheme of the Welsh Assembly Government, May 2009
[67] Welsh Assembly Government, One Wales : One Planet, The Sustainable Development Scheme of the Welsh Assembly Government, May 2009

Table 6 –Sustainability Themes and Overall Aims, Wales

Theme	Overall Aim
Climate Change	80% reduction of 1990 CO_2 levels by 2050. Reduce greenhouse gas emissions by 3% a year by 2011 in those areas where we have devolved competence, and ensure we are resilient to the impacts of climate change. 40% reduction in all emissions in Wales by 2020 on 1990 baseline.
Waste	Wales to be zero waste by 2050. 70% recycling rate across all sectors by 2025. 90% of non-hazardous construction waste recycled by 2020.
Planning	Provide for homes, infrastructure, investment and jobs in a way that helps reduce our ecological footprint. New Build: Housing – reduction in CO_2 emissions of 55% compared to 2006 by 2013[68]. Schools – zero carbon schools by 2017. Public sector buildings – zero carbon by 2018.
Wales Spatial Plan	To stabilise Wales Spatial Areas' ecological footprint by 2020, then reduce it across the range of its activities.

Source: Welsh Assembly Government, One Wales : One Planet, The Sustainable Development Scheme of the Welsh Assembly Government, May 2009. Note Overall Aims have been expanded in the table using the full document text.

Table 7 – Sustainability Footprint Themes and Overall Aims, Wales

Footprint themes (% of Wales' ecological footprint)	Overall Aim
Housing (25%)	Stabilise housing's ecological footprint by 2020, then reduce.
Food (20%)	Stabilise the ecological footprint associated with food and drink by 2020, then reduce.
Transport (18%)	Stabilise transport's ecological footprint by 2020, then reduce.
Consumer items (15%)	Stabilise the ecological footprint associated with consumer items by 2020, then reduce.

Source: Welsh Assembly Government , The Sustainable Development Scheme of the Welsh Assembly Government, One Wales : One Planet, May 2009.

In addition to the tables above, the scheme[69] gives further details around specific strategies and targets for Wales around climate change, Waste, Planning and Housing.

2.2.8.1 Climate Change

In order to help achieve the aspiration that new buildings constructed in Wales move rapidly towards zero carbon, the Welsh Assembly Government has pursued the devolvement of powers to make Building Regulations to Wales. The Welsh Assembly

[68] Welsh Assembly Government, Policy statement – Welsh Assembly Government announces target for first changes to Welsh Building Regulations , http://wales.gov.uk/docs/desh/publications/100709housingbuildregslongen.doc, 2010

[69] Welsh Assembly Government, One Wales : One Planet, The Sustainable Development Scheme of the Welsh Assembly Government, May 2009. Note the information in the sections titled Climate Change, Waste, Planning and Housing is sourced from this document unless otherwise specified.

Government website[70] confirms that in July 2009, an Order which transfers powers to make Building Regulations for buildings in Wales to the Welsh Ministers from 31 December 2011 was approved. This devolvement of power will be instrumental in allowing changes to Building Regulations in Wales, which in turn will permit delivery of zero carbon new build across sectors but particularly in the residential sector.

Increased energy legislation and building regulation at a national and international level will mean that the building industry will be much more closely regulated. Processes will be managed to avoid the falling foul of fines levied for energy and environment violations, but also to maintain company 'image'.

A Low/Zero Carbon Hub has been established to take forward the work of reducing carbon emissions from the built environment and to provide a built environment focal point for Wales' progressive climate change agenda involving both the public and private sectors. The Hub liaises with the UK Zero Carbon Hub, the Green Building Council and other organisations to ensure compatibility exists and best practise is shared across the construction industry. A Skills strand of the hub has been established and is being led by the Welsh Built Environment Forum[71].

In addition, the Welsh Assembly Government will continue to promote the BREEAM environmental assessment framework to the public sector in Wales. All investments for new building in education funded by the Welsh Assembly Government are required to meet BREEAM excellence standards.

2.2.8.2 Waste

The strategy Towards Zero Waste[72] published by Welsh Assembly Government sets out a long term framework for waste management and resource efficiency from 2010 until 2050. This strategy proposes a two-staged approach:

- A long-term aim of zero waste by 2050.
- A medium-term aim of achieving a high recycling society by 2025.

In order to achieve this Wales is aiming for a recycling rate of at least 70% across all sectors by 2025. As well as recycling, prevention of waste is the preferred option followed by minimisation, re-use, recycling, energy recovery and finally disposal. Note the construction sector will be expected to reuse and recycle 90% of its wastes by 2025.

In addition to the targets mentioned in the tables above, the Welsh Assembly Government is consulting on legislation to introduce a mandatory requirement for the production of construction site waste management plans.

2.2.8.3 Planning

In order to facilitate the introduction of new technology, the Welsh Assembly Government has freed up planning controls over domestic and commercial micro generation projects. In February 2009, new micro generation planning rules[73] came into effect. These new rules allow homeowners to install a range of domestic micro generation systems without needing to apply for planning permission. Under the revised planning laws, owners of houses and flats are able to install solar voltaic and solar thermal panels without contacting their local authority first. Ground and water source heat pumps are also excluded from the planning requirement, as are flues for biomass or combined heat and power equipment.

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[70] Welsh Assembly Government Website, November 2009 Press Release, 2010
[71] National Assembly for Wales, Cross Party Group on the Welsh Built Environment, http://www.assemblywales.org/memhome/mem-register-cross-party/welsh-built-environment.htm, 2010
[72] Welsh Assembly Government, Zero Waste Strategy, Towards Zero Waste, June 2010
[73] LowCarbonEconomy.com Website, New microgeneration planning rules launched in Wales, http://www.lowcarboneconomy.com/community_content/_low_carbon_news/7090/new_microgeneration_planning_rules_launched_in_wales, 2010.

In July 2010 the Welsh Assembly Government issued a Planning Policy consultation[74] into Planning for Renewable Energy. The main proposals include identifying different scales of renewable energy development for the purpose of planning policy and expecting local planning authorities to set targets and site allocations with criteria based policies for the delivery of renewable energy in their Local Development Plan

2.2.8.4 Housing

The target for new housing is that there is a reduction in CO_2 emissions of 55% compared to 2006 by 2013[75]. The Welsh Assembly Government has specified that all funded housing should meet a minimum of level 3 of the Code of Sustainable Homes, with a view to moving to higher code levels as soon as possible.

The Welsh Housing Quality Standard[76] set in 2002, includes an energy efficiency target equivalent to an Energy Performance Certificate rating of D, was developed to set a minimum standard that all social housing should meet by 2012. It aims to ensure that all homes provided by local authorities and housing associations have modern amenities. It has already resulted in investment of some £1.6 billion and in the process has created many jobs and training opportunities. It has also helped reduce energy consumption.

2.2.8.5 Implications for the construction industry

The sustainability themes and changes outlined above, introduced by the Welsh Assembly Government will have implications for the construction industry. There will be a need for new technology, skills and materials in order to comply with legislation. As well as introducing legislation, the Welsh Assembly Government is funding a number of programmes and there is evidence that sustainability is becoming more recognised by employers both across the UK and within Wales specifically.

The United Kingdom's commitment to reduce carbon and other greenhouse gas emissions is now a matter of legal obligation. Paul Morrell was appointed Chief Construction Adviser in December 2009. One of his initial priorities is to lead the Construction Innovation and Growth Team (IGT) which published in March 2010 its Emerging Findings[77] report. This is part of the challenge to bring the industry together to identify how best to deliver the 2022 carbon reduction commitments, to meet the broader challenges of the low carbon future, and to capture the many new opportunities it will bring.

The policy drive for sustainable development (enforced by legislation) is taking hold in the minds of the consumer, requirements of clients and the practices of the vast majority of the larger industry players.

According to recently conducted ConstructionSkills Employer Panel research[78] in Wales 74% v 68% UK of employers questioned described themselves as very (37% v UK 27%) or quite (37% v 41% UK) aware of the implications of the Low Carbon Agenda. Just under half of those questioned (52% v 47% UK) believe that low carbon issues are important to the success of the business. This number is, however, balanced by a similar proportion (43% 48% UK) who thought is unimportant. Approximately 1 in 10 (13% v 9%

[74] Welsh Assembly Government, Consultation Document, Planning for Renewable Energy, July 2010
[75] Welsh Assembly Government, Policy statement – Welsh Assembly Government announces target for first changes to Welsh Building Regulations , http://wales.gov.uk/docs/desh/publications/100709housingbuildregslongen.doc, 2010
[76] Welsh Assembly Government, Homes in Wales, April 2010
[77] HM Government Low Carbon Construction Innovation and Growth Team, Emerging Findings, March 2010
[78] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), October 2010 (Unpublished). A telephone survey of 1,511 employers and sole traders across UK construction industry complemented by 30 depth interviews, the sample included 95 employers in Wales.

UK) of employers questioned had a formal strategy or plan for reducing carbon emissions.

Overall 48% v 42% UK of employers questioned without prompting said they had taken steps to reduce the carbon footprint in the last 3 years. When prompted with a list of steps that might have been taken, 92% v 84% UK of employers had taken some steps. Most notable were new ways of working to reduce landfill (75% v 58% UK), training staff in low carbon skills (37% v 39% UK), introduced or promoted low carbon products or services (36% v 34% UK), introduced low carbon products and technologies (36% v 29% UK), action to ensure compliance with low carbon legislation (35% v 43% UK), reduced energy use (33% v 41% UK) or changed supplier to lower carbon footprint (23% v 13% UK). Almost half (39% v 48% UK) of all employers felt their carbon emissions were lower now than 3 years ago.

The UK report provides broad details of the UK Coalition Government's spending plans for green technology – this has been identified as a growth area. The CSR[79] details that the Department of Energy and Climate Change will see an increase in its overall budget to £3.7 billion in 2014-15, up from £2.9 billion in 2010-11.

Within this context, Welsh Assembly Government has created a programme of development. A recent press release[80] announced details that the first phase of arbed (meaning 'to save' in Welsh) - the Assembly Government's Strategic Energy Performance Investment programme is to be rolled out across Strategic Regeneration Areas in Wales. Over £30 million has been allocated to the programme through the Welsh Assembly Government's Strategic Capital Investment Fund (SCIF), which will be supplemented by funding from the UK Department of Energy and Climate.

Initially rolled out in October 2009, in the Heads of the Valleys – Wales' first low carbon Zone – arbed attracted considerable interest with applications to fund energy performance measures in 5,600 homes. Over 21 projects are underway, targeting low-income communities in Wales' regeneration areas. Over the next decade, investment into the sector in Wales will also come from the Home Energy Efficiency Scheme; the Welsh Housing Quality Standard; Feed In Tariffs; and energy supplier obligations. In total, around £350m over the next three years, or £1bn over the next decade, is likely to be invested into the energy performance of Welsh homes. The sector is highly labour intensive, creating skilled jobs.

In addition to arbed, there are other funding streams. Another recent press release from the Welsh Assembly Government[81], detailed an announcement made by Environmental Minister Jane Davidson of over £8 million to be made available to help community organisations in Wales invest in new technology to generate clean, renewable energy. The Community Scale Renewable Energy Generation project will provide finance of £100k to £300k per project to support the development of community based renewable energy schemes such as wind, biomass and hydro power. The funding will enable around 22 new and existing social enterprises to install innovative technology to generate electricity which they can then use or sell to the National Grid, or even to their communities, providing an on-going source of income. The jobs created will support the social enterprises established through the scheme.

In addition, around 135 small grants of up to £3,000 will be available to help communities to undertake feasibility studies into potential renewable energy schemes followed by 35 grants of up to £20,000 to help them develop their projects.

[79] HM Treasury, Spending Review, October 2010
[80] Welsh Assembly Government Website, November 2009 Press Release, 2010
[81] Welsh Assembly Government Website, 2010

Other support for green initiatives in Wales includes the Microgeneration Certification Scheme (MCS) [82], through which small and medium sized renewable energy installation companies will be able to access interest free loans to cover the cost of gaining MCS accreditation. Eligible companies will also be able to access the services of a development officer who will provide free and impartial advice to steer them through the accreditation process.

The programme will allow Welsh companies to benefit from the growth in the renewable industry stimulated by Feed-in Tariffs which were introduced by the UK Government in April 2010. The Feed-in Tariff will enable businesses, communities or individuals to be paid for the renewable electricity they generate and export to the grid. In November 2010[83] a support network was set up so that installers of renewable technology can have constructive discussions about the issues that really matter to them.

When fully embraced sustainable construction will not only impact on the way the industry builds and what it builds, but it could have a high impact on the skills of the industry. The skills factors depend upon the extent to which the industry acts. For some companies sustainability will demand new skills to design and build thus affecting professional and trade skills. For many the skills change will be around understanding and acting within legislation.

In order to maximise opportunities the construction industry will need to develop not only its technical capability but its ability to interface with other sectors, for example energy producers, and their supply chains. This could mean a significant shift in the skills and competence of the existing industry as part of a major process of innovation.

Application of the range of 'green' technologies will require the industry to advise on and install appropriate solutions across a range of markets. Failure of these product innovations, due to them being installed in inappropriate situations or a lack of expertise, could result in a downturn across the whole sector, as happened in the UK in the 1970s with timber frame housing.

New jobs created in environmental markets will not all require totally new skills, but will often be an addition to existing workers skill-sets. As this market develops it is likely that a significant number of the existing workforce will move into specialist environmental niches. This transfer would 'free up' jobs in the traditional sector and help to create wider opportunities for new entrants to the sector.

[82] Welsh Assembly Government Website, August 2010 Press Release, 2010
[83] Welsh Assembly Government Website, August 2010 Press Release, 2010

Summary Box

In Wales, 88,700 people are employed as both construction workers and professionals, accounting for 4.1% of the UK construction workforce. With an output in 2009 of £3.8 billion (at constant 2005 prices) the sector contributes 3.9% of the UK construction output.

Overall, in Wales the effect of the recession has resulted in reduced construction output in the short-term, although the medium to long-term forecast is for growth of around 1.2% per year between 2011 and 2015, slightly higher than the UK rate of 1.0%.

The CSR published in October 2010 indicates that Wales will receive the biggest cuts in its budget in at least a generation. Overall, the budget is facing a reduction of 0.8% per year in cash terms, or 3.1% per year in real terms. That means by 2014-15 the budget will be 12% lower in real terms than this year.

In Wales revised figures from PriceWaterhouse Coopers forecast that around 51,000 job losses, around 4.1% of total jobs in Wales, will be lost by 2014/15.

In Wales, the most mentioned key business challenge facing employers is the need to increase sales. The importance of finding suitable qualified staff declined from the key business challenge mentioned in February 2005 to a low of 1% of employers in November 2009, it has now increased back to 8% slightly above the August 2008 level of 6%.

Loss of workers during the recession may lead to skills gaps and shortages that will hinder the recovery, impacting the industry's ability to deal with opportunities in the upturn.

The media portrayal of construction as a changeable sector, particularly in respect of the recession reduces industry attractiveness for workers, reducing the inflow of talent and increasing the outflow to other industries.

There is a need for increased diversity both within the Welsh and UK construction workforce to exploit skills from a wider pool of talent.

Technological change is a key driver as the sector looks to achieve ambitious programmes with a smaller workforce.

Wales has introduced specific legislation designed to improve learning and skills.

Wales has set challenging environmental and sustainability targets around climate change, waste and planning that will significantly influence construction activity in Wales and act as a driver for product and process innovation. New funding streams will help the construction industry embrace sustainability technology and skills, creating new employment opportunities within the industry.

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

3.1 What Has Been the Level and Type of Skills Entering the Labour Market?

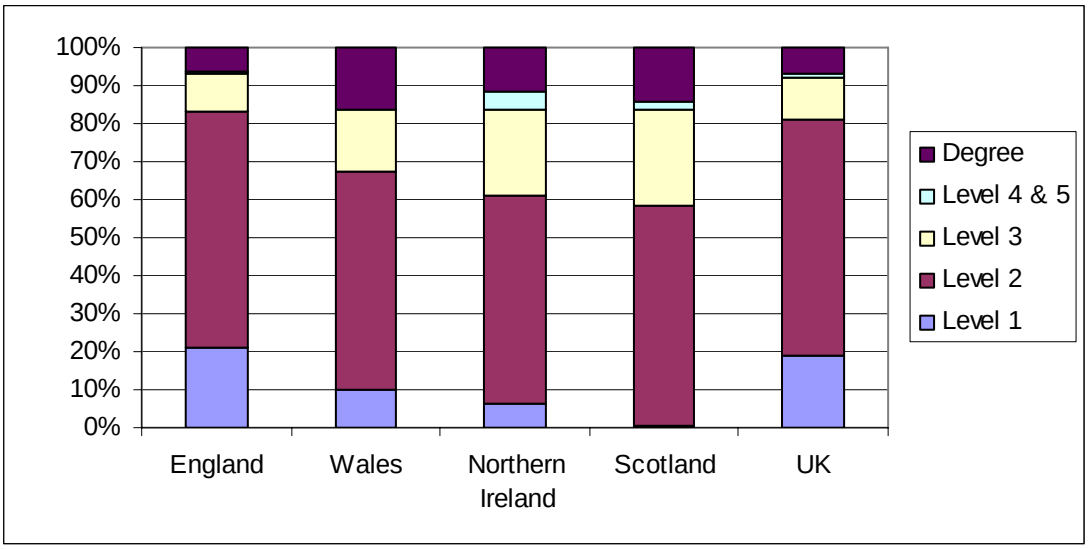
The following section sets out the recent trends in the level and type of skills by focusing on the four key areas of supply relevant to the construction industry, namely education and training, skill levels (using qualifications as a proxy), flows into the industry and migration.

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[84] training and education, ConstructionSkills has undertaken a research study [85] to obtain training supply data across the UK from both further and higher education.

The latest available data providing the complete UK training picture shows 145,000 construction qualification achievements in 2008/2009. In Wales the data shows 2,930 construction qualification achievements in 2008/2009. Chart 9 below, shows the share of training by level of qualification across each nation and the overall UK total.

Chart 9 – Achievers of qualifications within construction industry by level of qualification and nation, UK: 2008-2009



Source: ConstructionSkills Training Supply Project

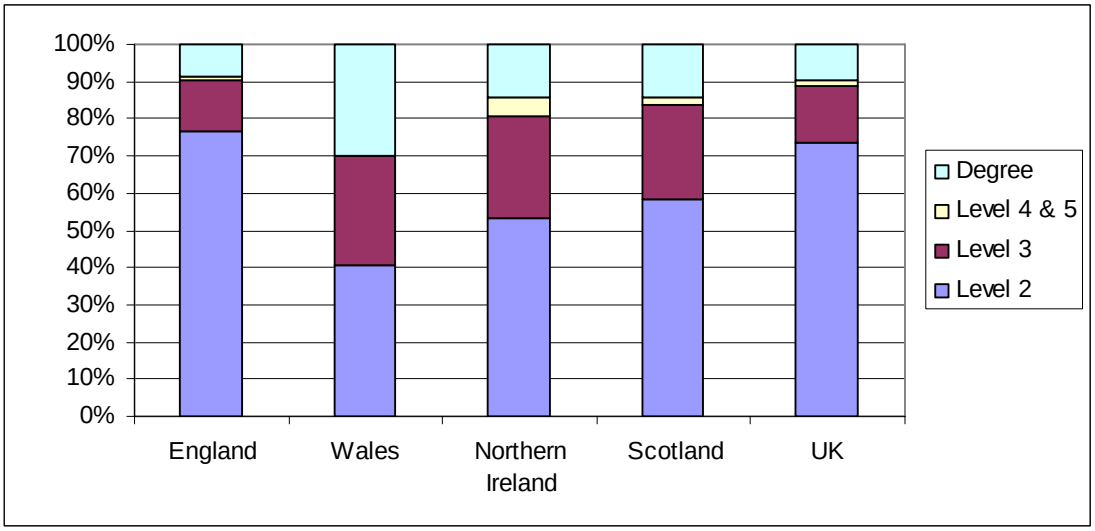
The picture of training for Wales is broadly similar to that of England except there appears to be a lower proportion of level 1 training and higher proportion of degree level training.

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

[84] The term 'accredited' in this context refers to officially recognised UK based qualifications
[85] 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.

use a Vocational Qualification (VQ) Level 2 as the competency benchmark (although in Scotland it is considered a Level 3, but for purposes of this analysis, the benchmark is set at a Level 2). 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 Level 1 qualifications and VRQ Level 2 qualifications shows an available workforce of 105,000 at UK level. In Wales further analysis of this data excluding all Level 1 qualifications and VRQ Level 2 qualifications shows an available workforce of 1,610. The share of training by qualification level and nation highlighted in Chart 10.

Chart 10 – Achievers of qualifications deemed competent to enter the construction industry by level of qualification and nation, UK: 2008/2009



Source: ConstructionSkills Training Supply Project

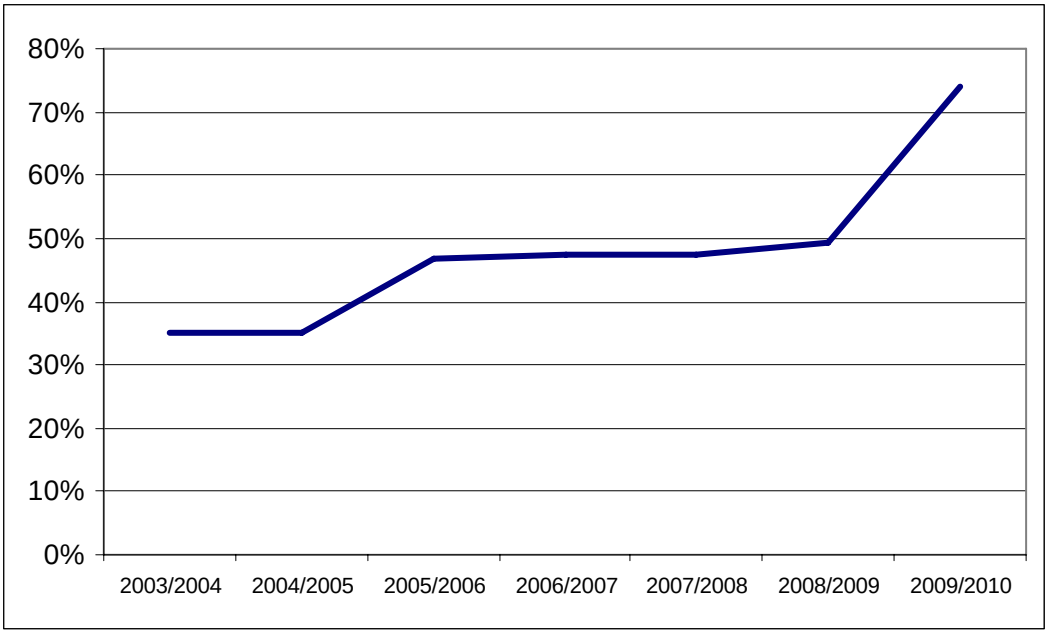
The available competent workforce at UK level is a reduction of 40,000 achievers, of which the majority (67%) were on a Level 1 VRQ. In Wales the picture is slightly different in that it is a reduction of 1,320 achievers, of which the majority (77%) were on a Level 2 VRQ.

One of the biggest concerns for the construction industry within the training and education arena is the increasing popularity of VRQ qualifications. As stated earlier VRQ Level 1 and 2 qualifications are not deemed to provide the required level of industry competency, however it appears that funding is being directed towards the take up of these qualifications which may be at the detriment of higher level qualifications.

Analysis of ConstructionSkills Trainee Numbers Survey[86] data highlights the increase in VRQ qualifications within the construction industry in Wales over a seven year period (2003/04 to 2009/10). On the whole VRQs share of craft training at Levels 1 to 3 has increased year-on-year. Overall the latest Trainee Numbers Survey (2009/10) found that 74% of first-year craft trainees were studying for a VRQ, which are predominately Diploma/Construction Awards.

[86] The Trainee Numbers Survey is an annual survey across Great Britain which measures the number of starters onto construction qualifications each academic year.

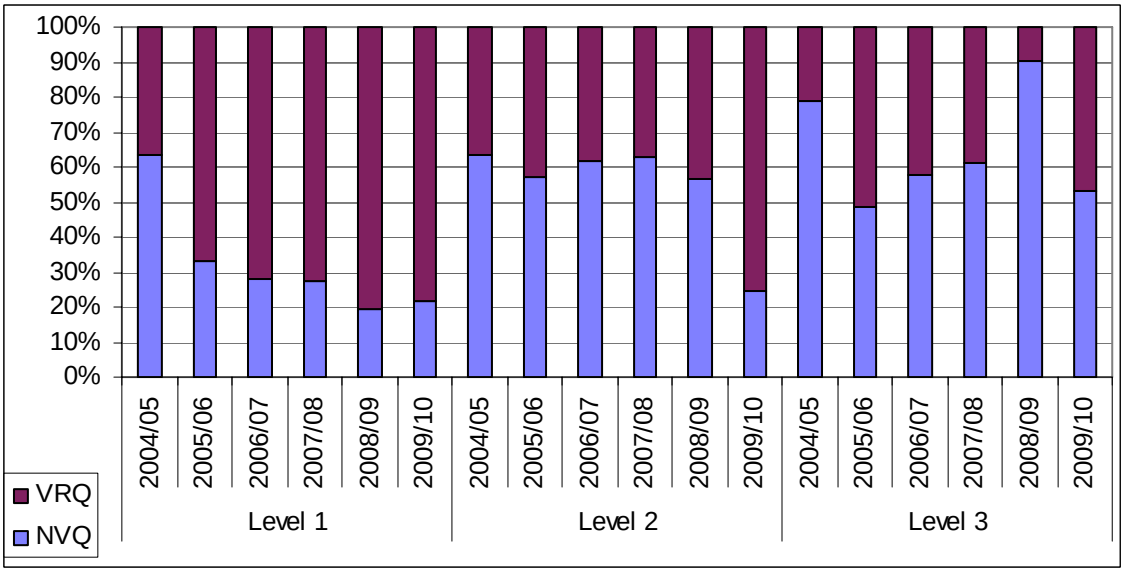
Chart 11 – Starters on a VRQ in construction: 2003/04 to 2009/10 (Craft training in Wales)



Source: ConstructionSkills Trainee Numbers Survey

Further investigation showing the breakdown between NVQ and VRQ qualifications for construction craft trainees further highlights the large share at a Level 1. This has increased quite substantially since 2004/05 and now stands in Wales at 79% of all starters on a Level 1 qualification. While the share on a Level 2 has remained broadly static (2009/10 figure is very different and could be an anomaly), conversely over the past few years the proportion of starters on a Level 3 has been more sporadic.

Chart 12 – Proportion of first-year trainees split by work-based training 2004/2005 to 2009/2010 (Craft training in Wales)



Source: ConstructionSkills Trainee Numbers Survey

3.1.2 Apprenticeships

In Wales the Trainee Numbers Survey sample is too small to provide useful Apprenticeship information. Figures from Wales are still to be incorporated into the Training Supply Project (this is planned for 2011). At this stage we are therefore limited to drawing insight from figures in other nations.

On the one hand whilst the share of VRQ training within further education has been increasing the evidence suggests that in contrast Apprenticeships have been declining.

Further analysis of ConstructionSkills' Trainee Numbers Survey[87] shows that over the four year period from 2006/2007 to 2009/2010, starters on an construction apprenticeship have decreased from 62% of all training at both level 2 and level 3 to just 44%. In other words, currently starters on an Apprenticeship account for less than half of all starters on level 2 and level 3 qualifications within Great Britain.

These findings are perhaps unsurprising given the recent recession and the current fragile recovery as substantiated by findings from ConstructionSkills 2009 survey on Skills and Training[88] within the UK construction industry. When employers that offered Apprenticeships were asked if the recession had had a negative impact on the number of Apprenticeships being taken on more than a third (35%) admitted that the number of Apprentices recruited by their establishment had fallen as a result (note sample is too small in Wales to report sensible results).

Additionally when employers who did not offer Apprenticeships were asked why this was the case, the main reasons given, mentioned by 16%, was that they did not have enough work to be able to take on Apprentices. This is much more important than in 2008 when only 5% of those who did not offer Apprentices mentioned it as a reason. Similarly financial constraints (10% vs. 4% in 2008), recession / uncertainty (6%, not mentioned in 2008), and not taking on new staff (6% vs. 3% in 2008) were all more likely to be reasons for not taking on Apprentices in 2009.

Clearly though apprenticeships are still a vital route of entry into the construction industry and there exists geographical variations as detailed below, with data from ConstructionSkills longitudinal survey on training supply providing a breakdown of Apprenticeship achievements within England and Scotland[89].

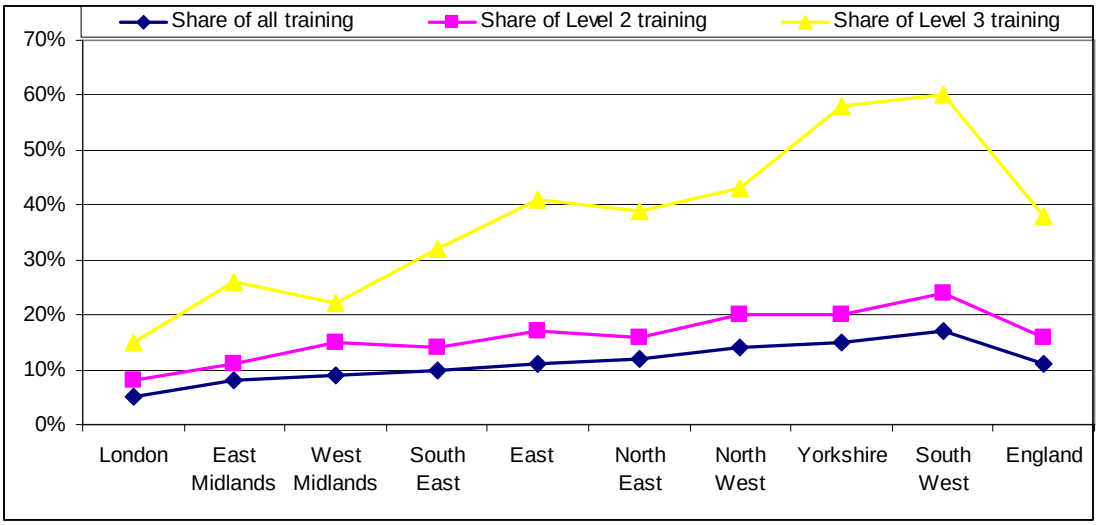
As a share of all achievements across England, Apprenticeships accounted for 11%, ranging from 5% in London to 17% in the South West. Although they are predominately being undertaken at a Level 2, on average three-quarters compared to a quarter at a Level 3, they make up a larger proportion of Level 3 qualifications, as shown in the chart below.

[87] The Trainee Numbers Survey is an annual survey across Great Britain which measures the number of starters onto construction qualifications each academic year.

[88] 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 (covering the construction contracting sector as well as professional services firms), the sample included 86 interviews with employers in Wales.

[89] Unfortunately the project is currently not able to provide a breakdown of Apprentices within Northern Ireland and Wales

Chart 13 – Apprenticeship achievements in England; 2008/2009



Source: ConstructionSkills Training Supply Project

The situation in Scotland is very different with Apprenticeship achievements accounting for just over two-fifths (22%) of all training. Additionally they are all being undertaken at a Level 3, and these account for 85% of all Level 3 achievements. As mentioned previously it should be noted that the benchmark of competency in Scotland is a Level 3.

3.1.3 Training by Occupation

The following takes a look at the make-up of training supply by focusing on the occupational breakdown. Unfortunately it is not yet possible to obtain this information from the longitudinal project on training supply, as mentioned at the beginning of this chapter. Therefore data has been taken from ConstructionSkills' Trainee Numbers Survey[90] to provide an indicative picture of training at further education and data has been sourced from the Higher Education Statistics Agency (HESA) to provide data for higher education.

The Trainee Numbers Survey longevity allows data on new entrants onto construction training to be tracked year on year. The following table lists the top occupations in Wales in descending order, in terms of their share of overall training in 2009/2010.

Table 8 – Starters on construction training within further education in Wales; 2004/5 to 2009/10

	2009-2010	2008/2009	2007/2008	2006/2005	2005/2006
Plant operatives	29%	20%	17%	16%	23%
Wood trades and interior fit-out	27%	26%	29%	28%	21%
Bricklayers	21%	19%	21%	18%	16%
Civil engineering operatives nec*	5%	8%	5%	4%	8%
Plasterers and dry liners	5%	2%	3%	3%	4%

Source: ConstructionSkills Trainee Numbers Survey

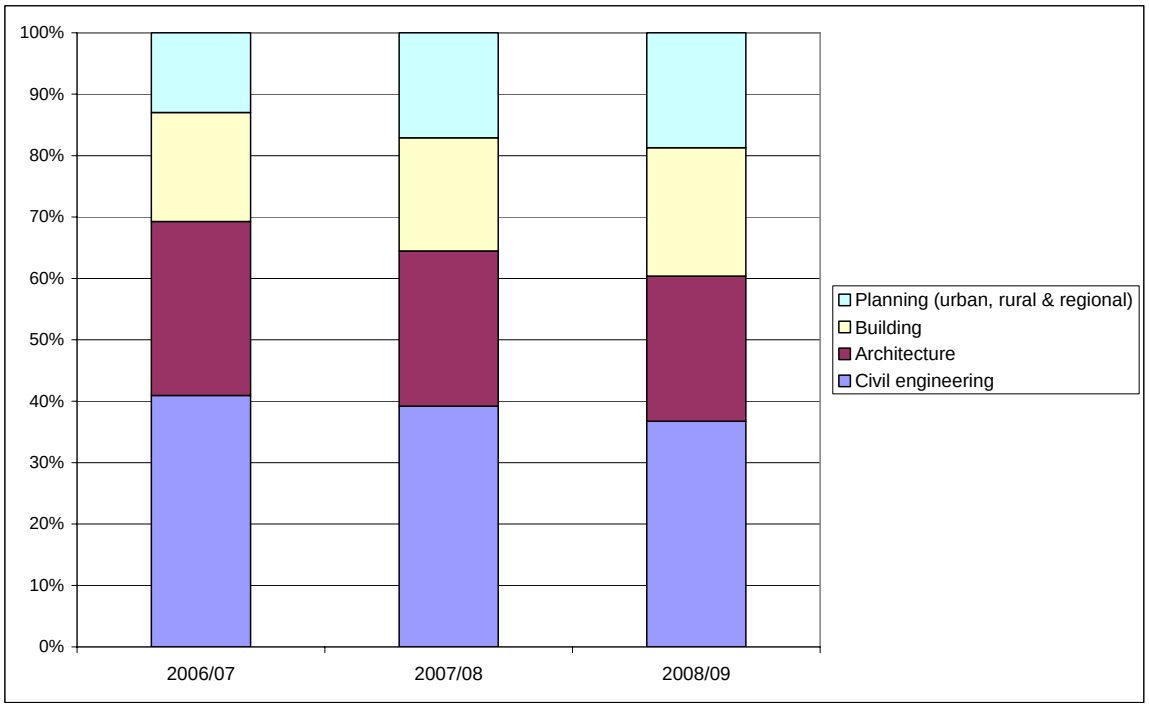
Source: ConstructionSkills Trainee Numbers Survey

[90] The Trainee Numbers Survey is an annual survey across Great Britain which measures the number of starters onto construction qualifications each academic year.

Plant operatives, wood trades and bricklayers dominate in terms of the trades with the largest proportion of starters on training and this reflects the size of those occupations in the industry in Wales.

Looking at higher education data in Wales, data for enrolments onto first degrees within the built environment show that civil engineering and architecture courses are the most popular in terms of numbers.

Chart 14: Student enrolments on built environment first degree courses by subject 2006/07 to 2008/09 (Wales)



Source: Higher Education Statistics Agency

3.1.4 Skill Levels in the Construction Industry

The following table shows the highest qualification level achieved by the construction industry workforce for each nation compared to that for all industries.

Table 9 - Construction Industry Workforce Qualifications v All Industries, All UK Nations: 2010

	Construction Industry					All Industries	
	Wales	UK	England	Scotland	Northern Ireland	Wales	UK
S/NVQ level 4 & above	29%	28%	28%	35%	17%	37%	36%
S/NVQ level 3	19%	17%	17%	18%	17%	16%	16%
Trade Apprenticeships	9%	13%	12%	18%	26%	4%	5%
S/NVQ level 2	14%	13%	13%	9%	13%	17%	16%
Below S/NVQ level 2	10%	11%	12%	6%	6%	12%	12%
Other qualifications	9%	9%	10%	7%	4%	8%	8%
No qualifications	11%	8%	8%	7%	17%	8%	7%
	100%	100%	100%	100%	100%	100%	100%

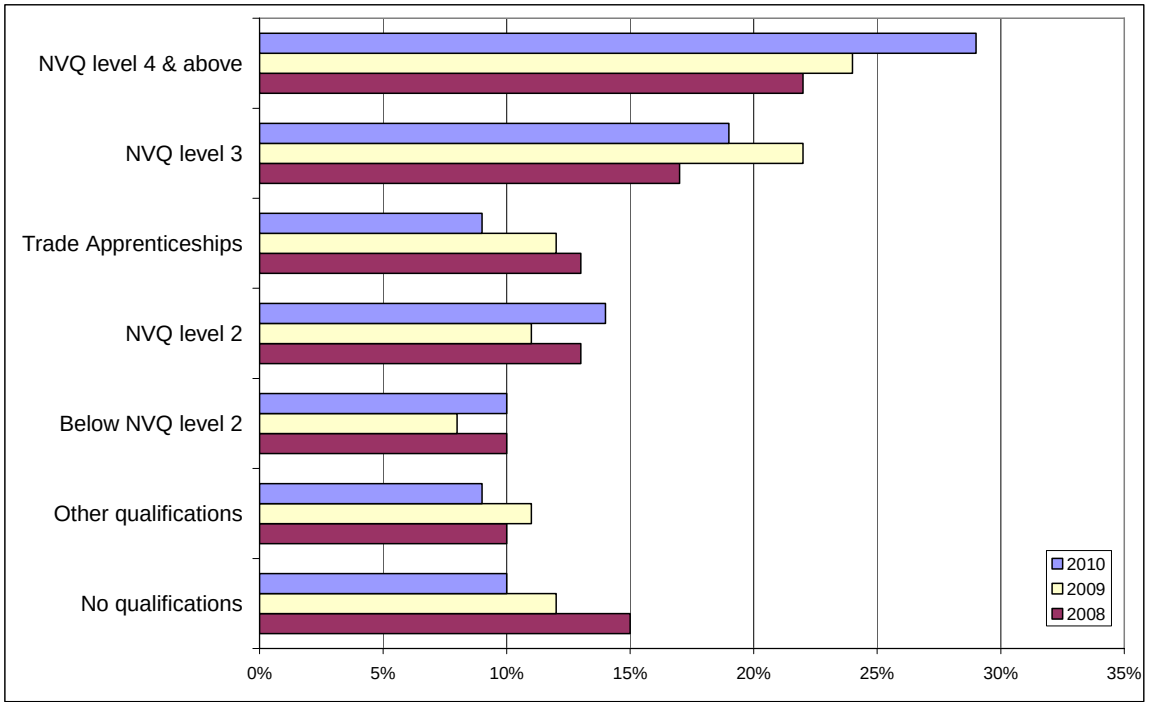
Source: Office for National Statistics, Labour Force Survey

The table shows that the construction industry workforce in Wales, in terms of qualification level achieved, is broadly in line with the wider UK and England profile.

Compared to all industries, a significantly higher proportion of the construction workforce trained as an Apprentice, but a smaller share trained to NVQ level 2. It is standard practice to equate an Apprenticeship to a Level 2 qualification, when these groups are added the Welsh construction industry has a very slightly higher proportion qualified to level 2 equivalent than all industries (23 v 21% respectively).

There have been quite dramatic changes to the qualifications of the construction workforce in Wales over the last three years as the chart below demonstrates.

Chart 15 - Qualifications of the Construction Workforce, Wales: 2008-2010



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*[91]. 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; shifting the balance of intermediate skills towards level 3.

Improvements in the skill levels of the construction industry can be seen at both ends of the scale in Wales. Both proportionately and in absolute numbers, there has been a significant increase in higher level qualifications and subsequently a decrease of those with no qualifications - certainly progress towards a fully qualified workforce. Overall, there appears to be a decline in lower level qualifications, which could be attributed to the retirement of less well qualified people in conjunction with improvements in the qualifications held by new entrants.

Analysis across a range of construction occupations in Wales is shown in tables 10 and 11, non-manual occupations and manual occupations respectively, note highlighted cells indicate the highest proportion for each occupation.

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

Table 10 - Construction Industry Workforce Qualifications by Non-Manual Occupations, Wales: 2010

	Civil engineers	Architects	Chartered surveyors	Quantity surveyors	All non-manual
NVQ Level 4 & above	78%	100%	52%	71%	58%
NVQ Level 3	22%	*	*	8%	8%
Trade Apprenticeships	*	*	26%	*	6%
NVQ Level 2	*	*	16%	*	12%
Below S/NVQ Level 2	*	*	*	*	7%
Other qualifications	*	*	6%	*	2%
No qualifications	*	*	*	21%	6%

Source: Office for National Statistics, Labour Force Survey
Note * indicates data not available due to the low sample size used in the Labour Force Survey

As might be expected the vast majority of those working in non-manual occupations in Wales are educated to NVQ Level 4 and above. It is interesting in Wales that a large proportion of chartered surveyors undertook trade apprenticeships.

Table 11 - Construction Industry Workforce Qualifications by Manual Occupations, Wales: 2010

	Bricklayers	Roofers	Wood trades	Painters & decorators	All manual
NVQ Level 4 & above	6%	14%	8%	*	12%
NVQ Level 3	49%	31%	45%	12%	25%
Trade Apprenticeships	15%	*	19%	16%	10%
NVQ Level 2	8%	13%	17%	29%	15%
Below S/NVQ Level 2	*	42%	1%	12%	12%
Other qualifications	12%	*	8%	14%	13%
No qualifications	10%	*	3%	17%	13%

Source: Office for National Statistics, Labour Force Survey
Note * indicates data not available due to the low sample size used in the Labour Force Survey

The picture across manual occupations in Wales is more varied, depending upon which trade is looked at. Overall, the greatest proportion of all manual occupations in Wales are educated to NVQ Level 3. This is the pattern found for manual occupations at UK level. Similarly, the greatest proportions of bricklayers and wood trades are educated to Level 3. Roofers with qualifications tend to be below S/NVQ Level 2 but note the sample is small, whilst Painters and Decorators with qualifications tend to be NVQ Level 2. The proportions of trade apprenticeships across occupations are high, strongest for Wood trades and Brick Layers (note sample size is too small for Roofers).

Overall, the Welsh construction qualification patterns for both non-manual and manual occupations are fairly consistent in comparison to overall UK level. The slight differences in proportions might be reasonably explained by the low sample used by the Labour Force Survey, with more specific research needed to investigate data further.

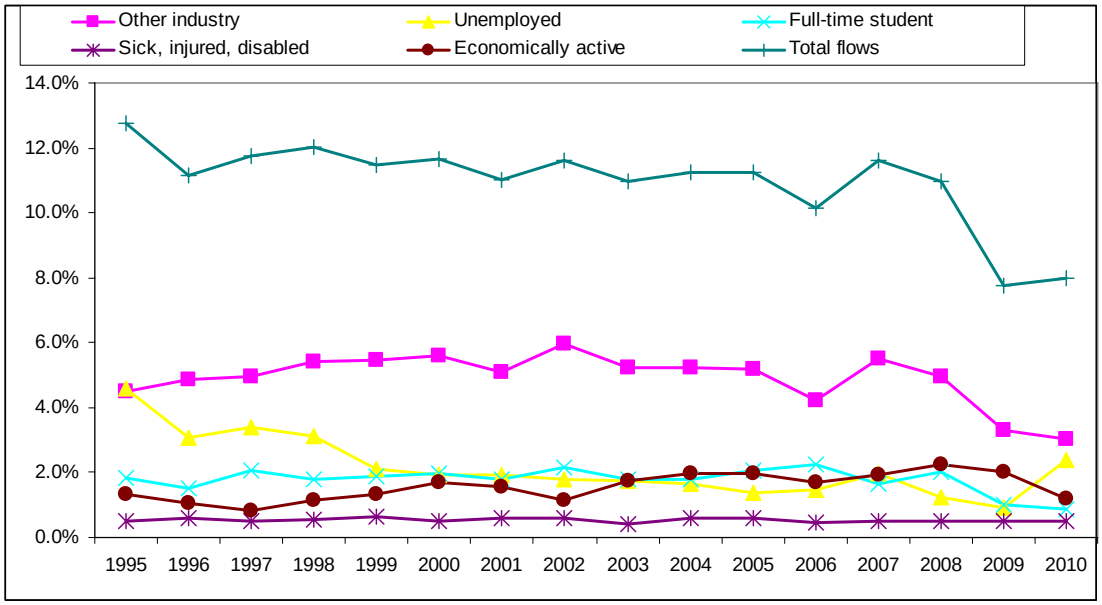
3.1.5 Flows into the Industry

Perhaps due to the size of the industry and range of jobs available, there have traditionally been flows of workers moving from other related industries into construction and similarly moving from construction to other sectors. Unsurprisingly, the recession has meant flows into the industry have decreased dramatically. For this area, data is limited to UK level only, although what we see at the UK level is likely to be indicative to

the situation in Wales. Often, in the past we have found that flows into the industry tend to balance those leaving the industry so the net gain or loss of workers in the industry is minimal.

Unsurprisingly total flows of workers (expressed as a proportion of the total workforce) into the construction industry declined dramatically in 2009; from an average of 11.4% between 1995 and 2008 to 7.8% in 2009. The slight upturn in 2010, to 8.0%, appears to be entirely due to a large increase in flows from unemployment which have risen from 0.8% in 2009 to 2.4% this year. Movement from other industries is the still the biggest flow into the industry, albeit now at its lowest level over the 16 year period (3%).

Chart 16 - Flows into the industry



Source: Office for National Statistics, Labour Force Survey

Previous analysis[92] found the biggest majority (28%) of entrants from other industries are qualified to 'other higher' level (covering higher level qualifications below degree level such as HNC and HND), although 15%, a considerable amount, of entrants do not have a qualification. In addition 68% of people entering construction from other industries last worked in construction less than two years ago. It is assumed that individuals who have worked outside the industry for less than two years can still be counted as part of the construction workforce and thus have the necessary skills. This finding reflects the mobility of the construction workforce in terms of their ability to move in and out of the industry as work dictates.

Furthermore, 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.

3.1.6 Mobility

A survey of construction industry mobility[93] found that overall workers 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.

[92] Taylor Associates, Analysis of movements into and out of construction industry employment and employment in construction related occupations using the British Household Panel Survey Waves 1 to 14, 2006

[93] ConstructionSkills, Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland, September 2007. Survey undertaken face to face with 3,877 construction workers across 312 sites distributed across UK and Republic of Ireland, within the overall sample 293 interviews across 21 sites were undertaken in Wales.

Construction workers in Wales are very slightly less likely to have always had the same trade as the overall workforce (57% had always had the same trade vs. 60% of the overall UK workforce). In Wales Labourer/Operative, Carpenter/Joiner, Plant/Machine operatives and Brick Layers are the most likely to have worked in a different trade during their time in the construction industry (14%, 9%, 7%, 5% respectively).

3.1.7 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. Unfortunately, there is very limited data availability for migration statistics and what is available is at the UK level only.

Recent analysis[94] found the number of workers from overseas in the UK construction industry has risen dramatically in recent years mainly as a result of increased migration from Eastern Europe (Poland and Lithuania joined the EU in 2004, the accession treaty with Bulgaria and Romania was signed in 2005).

Three fifths of overseas workers entered the UK construction industry work in skilled trades of some kind; while 14% go into elementary occupations and 8% into professional occupations. There does appear to be national differences in the types of occupations entered, for example the overwhelming majority of workers from Poland and Lithuania are to be found in skilled trades (respectively 74% and 70%) compared with an average of 60% working in skilled trades for all countries of origin.

The average proportion of self employment among construction workers entering the UK is 49%. Whilst nearly three-quarters of workers from Romania and approximately two-thirds from Lithuania are self employed, workers from South Africa and India are much less likely to be self employed (23% and 31% respectively).

Overall 87% of recently arrived workers in the construction industry have some kind of qualification. For the majority this was a qualification other than a UK recognised NVQ equivalent or trade apprenticeship. However, 13% of recent arrivals have no recognised qualifications; this is higher than the UK construction industry average of 9%, as discussed above.

Eurostat data shows that the construction industries in Poland, Lithuania and Romania are characterised by low productivity per employee, low wages and low levels of participation in continuing vocational training. These are not uncommon characteristics among the new EU member states most likely to provide construction workers to the UK industry.

The UK construction industry is likely to remain attractive to workers from Eastern Europe for the foreseeable future though the pattern of migration is likely to change over time as recession dampens demand for construction workers in the UK and demand in Eastern Europe rises. Migration of construction workers to the UK from Poland and Lithuania has fallen back from 2007 levels while numbers from Romania and Yugoslavia are rising sharply, though from very low levels. It is likely that wage differentials between the UK and Eastern Europe are still high enough in many cases to compensate for the risk of unemployment on arrival in the UK.

It seems clear that a continuing priority for the UK and Welsh construction industry must be to ensure that workers arriving from overseas to work in construction are equipped with the necessary training and skills to enable them to do so effectively and safely. In the case of construction industry workers from Eastern Europe this task is likely to be made more difficult because of the high proportion in self employment. Thought should

[94] Taylor Associates, Overseas workers in the UK construction industry, 2009

also be given as to how to minimise the potential economic damage to new EU member states caused by the migration of large numbers of their construction workers to the UK.

Summary Box

The construction industry in Wales and the UK is relatively well catered for in terms of the supply of skilled new entrants via education and training.

The picture of training for Wales is broadly similar to that of England except there appears to be a lower proportion of level 1 training and higher proportion of degree level training.

If Apprenticeships and Level 2 qualifications are combined, the Welsh construction industry has a very slightly higher proportion qualified to level 2 equivalent than all industries in Wales (23% v 21% respectively).

There have been changes to the qualifications of the construction workforce in Wales over the last three years. Both proportionately and in absolute numbers in Wales, there has been a significant increase in higher level qualifications and subsequently a decrease of those with no qualifications - progress towards a fully qualified workforce.

The decline in lower level qualifications could be attributed to the retirement of less well qualified people in conjunction with improvements in the qualifications held by new entrants.

Data in Wales for both flows of the construction workforce from and to other industries and migration is limited. Using UK data, total flows of workers (expressed as a proportion of the total workforce) into the construction industry declined dramatically in 2009; from an average of 11.4% between 1995 and 2008 to 7.8% in 2009. The slight upturn in 2010, to 8.0%, appears to be entirely due to a large increase in flows from unemployment which have risen from 0.8% in 2009 to 2.4% this year.

A priority for the construction industry in Wales and UK must be to ensure that workers arriving from overseas are equipped with the necessary training and skills to enable them to work effectively and safely.

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

3.2.1 Workforce Training and Development

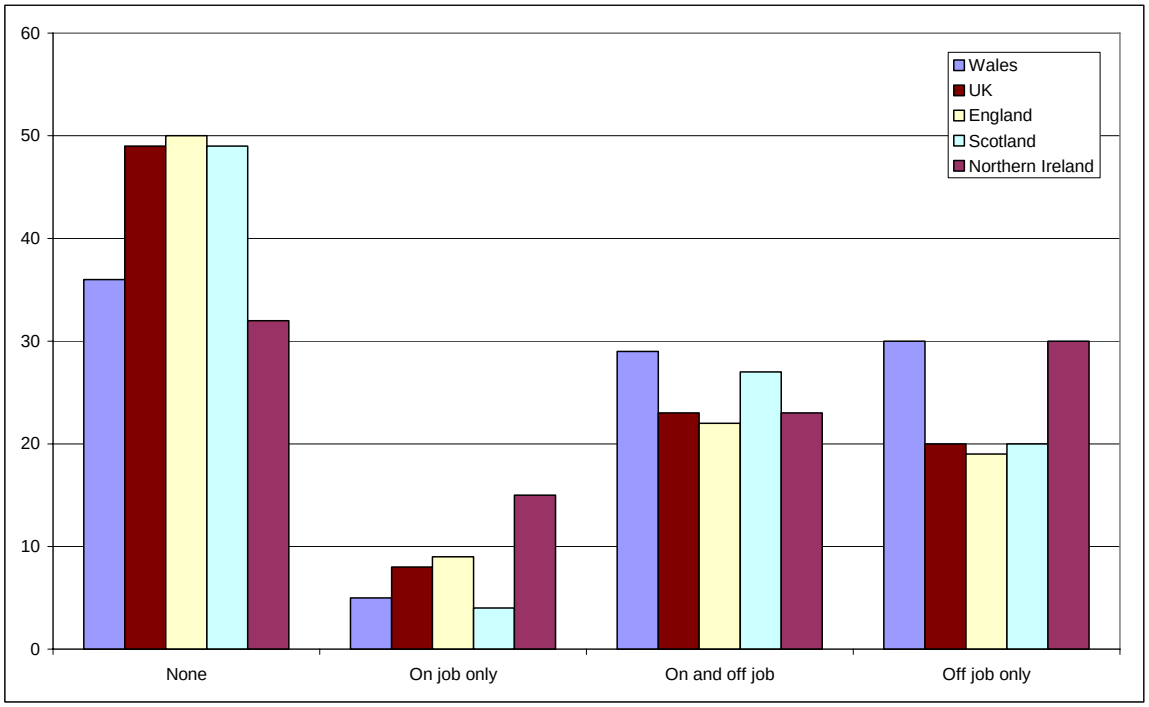
We have seen in previous sections how the construction industry's stock of skills (as defined by qualifications) is changing, we now examine for Wales other available measures of skills development, notably training activity and participation in training.

This section examines in Wales the extent and nature of training and development activity. It discusses off-the-job training[95] (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.

In Wales[96] 64% of establishments across the construction industry had funded or arranged training or development for staff during the 12 months to July 2009. This figure is higher than other UK nations (except Northern Ireland) with corresponding proportions of UK 51%, England 50%, Scotland 51% and Northern Ireland 68%.

Chart 17 summarises results by UK Nation and shows the proportion of establishments delivering on and off-the-job training, or both.

Chart 17 - Proportion providing training (on and/or off-the-job) by UK Nation



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

The chart shows that construction establishments in Wales have some of the highest proportions of training of the UK nations. Of the UK nations, Welsh construction

[95] 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 (covering the construction contracting sector as well as professional services firms), the sample included 86 interviews with employers in Wales.

[96] 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 (covering the construction contracting sector as well as professional services firms), the sample included 86 interviews with employers in Wales.

establishments are the second least likely to offer no training whatsoever (Northern Ireland is the least likely to offer no training). In Wales training is most likely to have some component of off-the-job training. In fact, using more detailed analysis in Wales, almost three in five of employers deliver some off-the-job training (59% - equivalent to just over nine in ten (92%) of those that train). This component is likely to be driven by the practices of smaller establishments. These figures are higher than the wider UK where 43% of employers deliver some off-the-job training (equivalent to 84% of those that train).

Employers in Wales reported providing training for approximately 44,700 workers (both direct employees and self-employed / indirect labour). This is equivalent to 38% v 39% UK[97] of the total current workforce. Data by sector is only available at UK level, where professional services firms trained a higher percentage of the workforce (46%) than the sector as a whole.

The survey measured numbers and proportions of staff receiving training both off-the-job and on-the-job training in the previous 12 months for construction trades and professionals. The sample for Wales was small compared to the UK, so results must be interpreted as indicative only. However, the overall picture of training by occupation appears broadly similar in Wales to the UK.

[97] Labour Force Survey, Four quarter average to Spring 2009

Table 12 - Distribution of off-the-job and on-the-job training by main occupational groups (construction contracting sector) Wales

	OFF-THE-JOB		*ON-THE-JOB*	
	Number receiving off-the-job training	***Number receiving off-the-job training as % of current directly employed staff***	**No. receiving on-the-job training**	***No. receiving on-the-job training as % of current directly employed staff***
Painters/ decorators	2135	*88*	*2250*	*93*
Supervisors	2380	*80*	*55*	*7*
Roofers	820	*74*	*115*	*11*
Plant and machine operatives	3765	*62*	*1440*	*24*
Bricklayers	1150	*53*	*340*	*16*
Plasterers	415	*52*	*350*	*44*
Labourers and general operatives	3880	*48*	*3130*	*38*
Plumbers	200	*47*	*160*	*37*
Technical staff	1525	*45*	*1380*	*41*
Floorers	385	*45*	*965*	*40*
Scaffolders	1330	*39*	*1940*	*57*
No one main role / multi task	2170	*37*	*1265*	*22*
Carpenters/ joiners	1105	*37*	*685*	*23*
Managers	3470	*34*	*2370*	*23*
Administrative staff	815	*13*	*425*	*7*
Electricians	80	*9*	*95*	*11*
Welders/ fabricators	*	*	*145*	*50*

Source: ConstructionSkills, Skills and Training in the Construction Industry 2009
Note: Figures rounded to nearest 5. * indicates figure not available as sample too small.
The overall sample for Wales is small compared to UK so these figures should be seen as indicative only

In Wales, in absolute terms, more labourers have received both off and on-the-job training than any other occupational group. This was the case at UK level and perhaps is due to the large proportion of workforce in this group. Generally speaking in Wales and the UK, the proportions of each occupational group trained on- and off-the-job are quite similar with the exception in Wales of Supervisors, Roofers, Plant and machine operatives and Bricklayers where the balance is towards off-the-job training. It is interesting that Scaffolders appear to receive more on-the-job training than off-the-job, perhaps due to the specific skills needed for that trade. More research is needed in this area to increase the sample used for Wales to fully understand the distribution of training.

The following table looks at results among the professional services sector.

Table 13 - Distribution of off-the-job and on-the-job training by main occupational groups (professional services) Wales

	OFF-THE-JOB		***ON-THE-JOB***	
	Number receiving off-the-job training **Wales data indicative only**	***Number receiving off-the-job training as % of current directly employed staff*** ***UK figures***	**No. receiving on-the-job training** **Wales data indicative only**	***No. receiving on-the-job training as % of current directly employed staff*** ***UK figures***
		%		*%*
Labourers	*	*58*	*	*62*
Building surveyors	365	*56*	*430*	*44*
Architectural technologists	170	*46*	*40*	*57*
Civil engineers	1230	*45*	*580*	*62*
Directors	105	*45*	*125*	*40*
Mechanical engineers	115	*40*	*90*	*36*
Quantity surveyors	15	*38*	*	*50*
Building Service engineers	*	*37*	*	*28*
Architects	255	*33*	*210*	*47*
Other engineers	1205	*31*	*1185*	*24*
Technicians	310	*30*	*385*	*34*
HR, legal & business professionals	85	*27*	*	*27*
Admin staff	250	*26*	*180*	*24*
Surveyors / estimators	15	*25*	*	*22*
Project managers	175	*23*	*165*	*18*
Managers	50	*20*	*80*	*52*

Source: ConstructionSkills, Skills and Training in the Construction Industry 2009
Note: Figures rounded to nearest 5. * indicates figure not available as sample too small.
The sample for Wales is very small compared to UK. Indicative numbers have been added where available but proportions using Welsh data were too unreliable and UK proportions have been used as indicated.

In Wales, in absolute terms Civil Engineers and Other Engineers were the two occupations where most staff appear to have received either on-the-job or off-the-job training. This may be due to higher numbers employed in those professions and the small sample size used in Wales. The wider UK data shows a broadly even split between on-the-job and off-the-job training for professionals with the exception of Managers, Civil Engineers and Quantity Surveyors who appear to have received a greater proportion of on-the-job training in the last 12 months.

Turning now to volumes of training, in Wales establishments that provided training provided an average of 7 days off-the-job training and 7 days on-the-job training per employee (these figures are slightly above the UK average of 6 days for each training

type). At the UK level (figures are not available split for professionals in Wales) professional services firms provide slightly more off-the-job training days per recipient than construction firms (8 compared with 5 days), though there was no difference for on-the-job training.

Whilst the extent of training is considerable it is important to measure the extent to which it will feed into increased qualification attainment. In Wales just under two in five employers that train (39%) had provided training intended to lead to a nationally recognised qualification. This figure is slightly lower than that of the wider UK where 44% of employers that train had provided training intended to lead to a nationally recognised qualification.

Results indicate:

- In Wales, employers have arranged training for approximately 10,000 staff (270,000 UK) that was intended to lead to a qualification. This is equivalent to 9% v 12% UK of the total current (direct and indirect) workforce.

- In Wales the number of staff involved in NVQ/SVQ training in the last 12 months is equivalent to 4% v 8% UK of the total current workforce.

Using UK data only (not available for Wales):

- Larger employers are much more likely to train to qualifications suggesting they place greater relative importance on qualifications than smaller employers.

- The construction contracting sector is slightly more likely to train to qualifications than professional services firms.

- Among the construction contracting sector, a third of those that train have trained staff to NVQs/SVQs whereas HNDs/HNCs are much more likely to be used by professional services firms. Given that NVQs/SVQs tend to be studied at level 2 while HNDs/HNCs are level 4 qualifications, results indicate generally higher level qualification requirements in the professional services side of the sector.

Table 14 – Level of NVQ staff are trained to Wales v UK

	Wales (note low sample)	**UK**
Level 1	2%	8%
Level 2	24%	69%
Level 3	37%	20%
Level 4 or above	47%	8%
Don't know / not sure	3%	9%

Source: ConstructionSkills, Skills and Training in the Construction Industry 2009
Note: Figures add to more than 100% as respondents could give multiple answers.
Sample for Wales is very small so results are indicative only

The survey measured the level of NVQ staff were being trained towards. Results for Wales are indicative only due to the low sample used, although it is interesting that just under half of those surveyed were training to NVQ Level 4 or above. The more reliable data at UK level only show as might be expected that the majority (69%) of those currently being trained are to Level 2. As discussed in the previous chapter if the UK is

to meet the targets Leitch[98] 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) then this finding is of concern.

Employers training staff to NVQs at level 1 were asked why they trained staff at this level, and what benefits they thought it brought. Data is only reliable at UK level, where responses tended to focus either on it helping to improve skills and improve proficiency (55%), or specifically it improving health and safety and making the workplace safer (36%), sometimes in relation to this helping the firm comply with regulations (27%).

3.2.2 Barriers to Providing More Training

In Wales just over half of employers that trained would have preferred to provide more training than they actually undertook (61%). This proportion is slightly greater than the wider UK proportion of 52%. There were two main barriers to being able to deliver more training;

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

In Wales a lack of funds was by far the greatest barrier to training, mentioned by 95% v 70% UK of those establishments that would have provided more training if they could. Not being able to spare staff the time off for training was mentioned by 38% v 44% UK of those establishments that would have provided more training if they could.

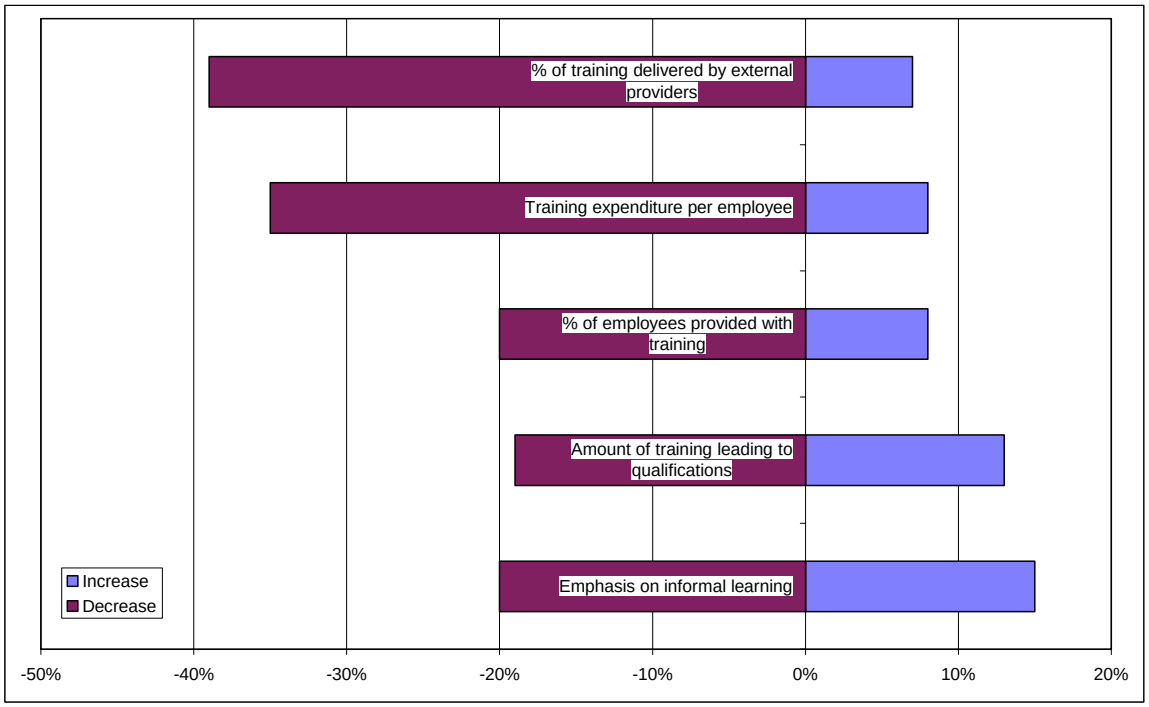
Again at the UK level only due to the small sample size, supply-side issues were relatively rarely mentioned as barriers: among those that would have liked to deliver more training 3% mentioned a lack of appropriate training or qualifications in the subject areas they required, 3% a lack of provision (for example courses being full up), 2% the difficulty of finding providers who can deliver training when and where they want it and 1% mentioned a lack of good training providers locally.

3.2.3 The Impact of the Recession on Training Activity

According to the 2009 survey[99], for many employers, as might be expected the recession has had a negative effect, as shown in the following chart.

[98] Leitch Review of Skills, Prosperity for all in the global economy – world class skills, December 2006
[99] 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 (covering the construction contracting sector as well as professional services firms), the sample included 86 interviews with employers in Wales.

Chart 18 - The impact of the recession on training



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

In Wales almost two in five (39% v 31% UK) were delivering less training via external providers because of the recession, and a similar proportion were spending less per employee on training (35% v 30% UK). Fewer, though still around one in five, were training fewer of their staff (20% v 24% UK) or were providing less training leading to qualifications (19% v 23%). Overall, these figures compare closely to those of the wider UK.

The recently conducted ConstructionSkills Employer Panel[100] research in Wales provides an updated picture of training activity. According to these figures the majority of employers (64% v 63% UK) had not made any changes to the training they provided due to the economic downturn. Only a quarter (29% v 26% UK) admitted they had reduced training and interestingly a minority (7% v 10% UK) had actually increased the amount of training they provided.

For those who had reduced training, just under half (40% v 47% UK) had trained fewer staff and given each trainee less training, with job specific training being the most likely to be cut back on. Employers increasing training were doing so in order to gain a competitive advantage (49% v 25% UK) or to increase skills amongst their workforce (23% v 41% UK). For all employers who had changed the way they deliver training, just over a quarter (27% v 54% UK) had starting carrying out more in-house training.

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

[100] ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), October 2010 (Unpublished). A telephone survey of 1,511 employers and sole traders across UK construction industry complemented by 30 depth interviews, the sample included 95 employers in Wales.

3.2.4 Reasons for not Providing Training

In Wales[101], the most common reason for not training is a belief that all staff are fully proficient, a factor mentioned by just over three quarters of non-trainers (77% v 75% UK). In comparison supply-side issues are mentioned by far fewer employers 10% v 6% UK say a reason for not training is external courses being too expensive and 12% v 3% UK cite courses not being available locally. The difference in proportion citing courses not being available locally could be due to training being concentrated in cities within Wales and local geographical/transport factors.

Again at UK level only, reasons for not training among the self-employed were very similar to employers, with by far the most common reason being they considered themselves fully proficient (68%). Other relatively common reasons were being too busy (7%) or the expense of external courses (6%).

Summary Box

In Wales 64% v 51% UK of establishments across the construction industry had funded or arranged training or development for staff during the 12 months to July 2009.

In Wales training is most likely to include some component of off-the-job training. In Wales, almost three in five of employers deliver some off-the-job training (59% v 43% UK) - equivalent to just over nine in ten (92% v 84% UK) of those that train.

Employers in Wales reported providing training for approximately 44,700 workers (both direct employees and self-employed / indirect labour). This is equivalent to 38% v 39% UK of the total current workforce.

In Wales establishments that provided training provided an average of 7 v 6 UK days off-the-job training and 7 v 6 UK days on-the-job training per employee.

In Wales just under two in five employers that train (39% v 44% UK) had provided training intended to lead to a nationally recognised qualification.

In Wales and UK a lack of funds was by far the greatest barrier to training, mentioned by 95% v 70% UK of those establishments that would have provided more training if they could. Not being able to spare staff the time off for training was mentioned by 38% v 44% UK of those establishments that would have provided more training if they could.

According to recently conducted ConstructionSkills Employer Panel research in Wales, the majority of employers (64% v 63% UK) had not made any changes to the training they provided due to the economic downturn. Only a quarter (29% v 26% UK) admitted they had reduced training and interestingly a minority (7% v 10% UK) had actually increased the amount of training they provided.

In Wales, the most common reason for not training is a belief that all staff are fully proficient, a factor mentioned by just over three quarters of non-trainers (77% v 75% UK).

[101] 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 (covering the construction contracting sector as well as professional services firms), the sample included 86 interviews with employers in Wales.

4. Current Mismatches between Demand and Supply for Skills

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

Note: The majority of information contained in sections 4.1 and 4.2 comes from ConstructionSkills 'Skills and Training in the Construction Sector' 2009 research;[102] which was designed to provide a single source of evidence, representative of the construction contracting sector across Great Britain (Standard Industrial Classification SIC 45) investigating skills and training issues because:

- there is no other survey that covers the whole construction industry
- other surveys are too generic
- other surveys do not cover the self-employed which make up a large proportion of the construction workforce.

Where other sources are used this is referenced in footnotes.

4.1 Skill Shortages

To understand the context of skill shortages in the construction industry, it is imperative to look at the recruitment activity of employers[103]. In order to achieve this, employers in Wales were asked whether over the last 12 months they had had shortages of skilled workers;

- Just over one in ten employers (12% v 8% UK) felt that there had been times when they lacked the number of skilled workers they required;

- Around half (51% v 52% UK) felt that they had been operating at around full capacity given the number of skilled staff they employed

- Just over a third (35% v 33% UK) had not had enough work for their workforce

[102] 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 (covering the construction contracting sector as well as professional services firms), the sample included 86 interviews with employers in Wales.

[103] 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 (covering the construction contracting sector as well as professional services firms), the sample included 86 interviews with employers in Wales.

The table below compares the four nations, Wales compares fairly closely to the overall UK picture but results indicate that there is more of a shortage of skilled workers than other nations.

Table 15 – Work Balance and Skilled Worker Availability

	Wales	UK	England	Northern Ireland	Scotland
For all or most of the last 12 months we did not have enough skilled workers for the amount of work we had on or which we could have had	4%	2%	2%	3%	2%
For some of that time we did not have enough skilled workers	12%	8%	8%	3%	9%
For most of the last 12 months we have been operating at or near full capacity	51%	52%	53%	33%	54%
For most of the last 12 months we have not had sufficient work for our workforce	33%	35%	34%	61%	32%
Don't know/ Not applicable	*%	3%	3%	*%	2%

ConstructionSkills, Skills and Training in the Construction Sector, 2009

Results show very considerable changes compared with 2008[104], with far fewer employers in 2009 reporting shortages of skilled staff over the previous 12 months. In 2008, in Wales 19% v 33% GB felt there had been times when they lacked the number of skilled workers they required; compared to 2009 in Wales 12% v 8% GB.

These findings are consistent with trade survey[105] results from organisations across the construction industry, who all reported a considerable decrease in skill shortages to a record low. For instance, the latest Construction Products Association Trade Survey (Q2, 2010) reported that 13% of building contractors had difficulties in finding on-site labour, contrasting sharply with the 80% figure seen three years ago.

Where a lack of skilled workers was cited, the implications appear to be quite severe. Although the sample for Wales was very small, in Wales just under 1 in 10 reported having to turn work down as a result (9% v 67% UK) and just over one third had been forced to sub-contract (34% v 52% UK). More specific research including a larger sample in Wales is needed to understand these potential differences.

Just under half of all employers in Wales (45% v 36% UK) had *attempted* to recruit skilled staff in the last 12 months.

At the UK level (data not available for Wales) this:

- Increases with size of employer
- Is higher among the construction contracting sector (SIC 45) than professional services firms (SIC74.2) (38% v. 29% respectively)

The impact of the downturn is evident in the fall compared with 2008[106], in the proportion of employers attempting to recruit skilled staff in the last 12 months. In 2008 in Wales 47% v 58% GB of the construction contracting sector had attempted this, in 2009 in

[104] ConstructionSkills, Skills and Training in the Construction Industry, 2008. A telephone survey of 975 employers and 150 sole traders/self-employed operating in the UK construction sector (covering the construction contracting sector), the sample included 59 interviews with employers in Wales.
[105] Federation of Master Builders. State of Trade Survey, Q2, 2010; RICS Construction Market Survey, Q3, 2010; Construction Products Association. Construction Trade Survey, August 2010;
[106] ConstructionSkills, Skills and Training in the Construction Industry, 2008. A telephone survey of 975 employers and 150 sole traders/self-employed operating in the UK construction sector (covering the construction contracting sector), the sample included 59 interviews with employers in Wales.

Wales only 45% v 39% GB had done so. It is interesting that the fall is much less in Wales than GB, more research would be needed to fully understand this but it does suggest less impact of the recession on recruitment of skilled labour in Wales compared to GB.

4.1.1 Skills Shortages in the Professional Sector

According to research undertaken on the construction professionals[107] in the UK published earlier this year 46% of firms in the sector have cut back on planned recruitment of graduates or newly qualified staff. The research also showed that across the industry the number of graduates and newly qualified staff employed by firms in the sector comprises just over 4% of the total workforce – this is half the number employed 12 months earlier.

Further to this 67% of professional services firms felt that the supply of graduates currently exceeds demand, with Architects being the occupation most employers mentioned as being in excess supply. The over supply of graduates is considered to be as a result of:

- Lower uptake of graduates due to the recession
- Structural changes in the economy
- Government policy to increase the number of university places.

It is believed that many of these unemployed graduates will leave the industry never to return and universities may start to cut or reduce courses (as there is less and less demand for this training), in addition to this many professionals are postponing retirement due to reduced pension pots further reducing opportunities for graduates. It is anticipated that these two factors could therefore cause a medium term skills shortage in the sector.

4.1.2 Hard-to-Fill Vacancies

In Wales just over three in ten employers trying to recruit skilled staff reported some of these vacancies as being hard-to-fill (31% v 29% UK), equivalent to 14% v 10% UK of all employers experiencing recruitment difficulties for skilled staff in the previous 12 months. These findings indicate a large fall in recruitment difficulties compared with 2008, a possible reflection of the recession, due in part to the decrease in the numbers of skilled staff being sought and the increase in the supply of skilled workers in the labour market.

Although data is not available for Wales by broad sub-sector, UK data indicates clear differences, with professional services firms that had attempted to recruit skilled staff far more likely to have encountered recruitment difficulties (56%) than the construction contracting sector (22%).

[107] 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 (covering the construction contracting sector as well as professional services firms), the sample included 86 interviews with employers in Wales.

The following table shows the main occupations by sub-sector which were most likely to have hard-to-fill vacancies. In Wales base sizes are too low to provide useful data, so the data is only available at UK level.

Table 16 - Main Occupations where hard-to-fill vacancies encountered

Construction contracting	Professional services
Carpenters / joiners (19%)	Civil engineers (13%)
Floorers (18%)	Mechanical engineers (11%)
General Operatives (17%)	Other engineers (12%)
Plant / machine operators (15%)	Architectural technologists (10%)
Painters / decorators (14%)	Electricians (10%)

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

Respondents were asked if these hard-to-fill vacancies had occurred when recruiting *direct employees*, *self-employed* or *both*. Again at UK level only, in a number of occupations the vast majority of hard-to-fill vacancies had occurred among employers trying to recruit direct employees. In other occupations the preponderance was towards hard-to-fill vacancies occurring where employers had been attempting to recruit self-employed and indirect labour more than direct employees, most noticeably carpenters / joiners, plasterers and roofers, and architectural technologists. For plant and machine operatives and general labourers there was a broad balance between the proportion of employers that had been attempting to recruit direct employees or the self-employed.

The survey asked respondents about causes of hard-to-fill vacancies. The sample for Wales was again small, so the more reliable data is at UK level only. As there were some valid responses for Wales, data has been added to the table against UK data but should be seen as indicative only. At the UK level, the most common cause of hard-to-fill vacancies was lack of skills (84%, much higher among the construction contracting sector than among professional services firms – 95% v. 69% respectively), experience or motivation, as well as not enough people entering the industry. The order of causes presented in the following table is almost identical to 2008.

Table 17 - Causes of hard-to-fill vacancies for skilled staff

	Wales	UK	England	Scotland	Northern Ireland
Applicants lack the skills we require	69%	84%	88%	63%	100%
Not enough people being trained in the construction trades in recent years	36%	81%	86%	76%	49%
Applicants lack the motivation / attitude we look for	84%	74%	72%	79%	100%
Applicants lack the work experience we look for	37%	68%	69%	65%	100%
Low number of applicants generally	33%	53%	54%	51%	49%
Applicants lack the qualifications we look for	34%	51%	54%	46%	3%
Competition from other employers	2%	39%	38%	74%	0%

Source: ConstructionSkills, Skills and Training in the Construction Industry 2009
Note the sample for Wales was small and therefore Welsh data is indicative only

In Wales, it should be noted that the most mentioned cause of hard-to-fill vacancies was applicants lacking the motivation / attitude that is looked for, although with the sample available this figure appears broadly similar to the UK level. It is interesting though that

in Wales much fewer respondents mentioned that there are not enough people being trained in the construction trades in recent years compared to the UK (36% v 81% UK). Similarly, applicants lack the qualifications we look for was lower in Wales compared to the UK (34% v 51% UK). This perhaps indicates qualifications and supply issues are less of a concern in Wales than other parts of the UK, clearly more research would be needed to confirm this.

A further question was asked regarding the main skills lacking in applicants. In Wales most respondents mentioned right attitude (enthusiasm, motivation, commitment, willingness) at 27% v 33% at UK level. In Wales, the next most mentioned was Construction qualifications (including CSCS cards) at 24% v 14% at UK level. Relevant work experience appears less of an issue in Wales at 10% v 27% at UK level.

In Wales some of the skills mentioned were technical, for example 25% mentioned electrical skills v 4% at UK level. Broader basic education – literacy / numeracy received fewer mentions in Wales 1% v 8% at UK level. Further, lack of social / people / communication skills were not mentioned in Wales but received 4% of mentions at UK level.

In Wales, we have seen that fewer employers in 2009 have experienced recruitment difficulties for skilled positions than in 2008. Although the impacts remain severe, figures indicate lower proportions of difficulty in Wales compared to the wider UK. Just over half (52% v 61% UK) have had increased operating costs, with approximately a third increasing the use of overtime and the workload of staff generally (35% v 74% UK) and similarly a third (34%v 52% UK) outsourcing work. In Wales only 9% v 67% UK have lost business or not bid for work as a result of the lack of skilled staff. It is interesting that in Wales 25% v 4% UK of those with recruitment difficulties for skilled staff say it has had no impact on their business.

4.1.3 Steps Taken to Overcome Recruitment Difficulties

In Wales nearly all employers experiencing recruitment difficulties had taken some steps to try and overcome them (97% v 66% UK), most often trying new recruitment methods or channels (65% v 32% UK), increasing trainee programmes (24% v 10% UK) or increasing advertising / recruitment spend (8% v 6% UK). It is interesting that in Wales no respondents mentioned that they were increasing training for existing staff v 14% at UK level, this could be due to the low sample available or that respondents consider existing staff are already adequately trained.

Data by employer size is only available at UK level, where nearly all employers with 100 or more staff experiencing hard-to-fill vacancies had taken steps to overcome their recruitment difficulties (94%), and they were particularly likely to have tried new recruitment methods or channels (65%) or increasing their recruitment advertising spend (31%). Those with 25-99 staff tended to respond quite differently, placing much more emphasis on increasing training either to existing staff (35%) or by expanding their trainee programme (32%).

In Wales, note though base sizes are small so the more reliable data is at UK level, the proportion taking any action to meet recruitment difficulties for skilled staff was slightly higher in 2008 than 2009: in Wales in 2008 98% v 75% GB of the construction contracting sector had taken any action compared with in 2009 97% v 64% GB. In Wales, the biggest fall has been in the proportion increasing recruitment advertising spend as a response (28% v 19% GB in 2008 but only 8% v 2% GB in 2009), suggesting limits on increased spending due to the recession.

4.2 Skill Gaps

In Wales, overall just over one in ten employers (14% v 10% UK) have staff lacking proficiency. Data by employment type and size is only available at UK level, where more than one in six of the self-employed (17%) regard themselves as having a skills gap.

Generally speaking, the larger the employer the more likely they are to have any skills gaps – this in part simply reflects the fact that they have more employees who could lack skills.

Fewer employers reported any skills gaps in 2009 than in 2008. In Wales in 2008 17% v 17% GB employers reported skills gaps, in 2009 14% v 11% GB employers reported skills gaps. As we see later, skills gaps are very often explained by recruitment activity whereby staff are taken on who are not (yet) fully proficient; hence part of the reduction in the incidence of skills gaps is explained by reduced recruitment activity during 2009.

In summary;

- In Wales, employers describe some 4,600 v 58,800 UK direct employees as not fully proficient, equivalent to 6.6% v 4.0% UK of the directly employed workforce.

- In Wales 92% v 87% UK of the staff lacking proficiency work in the construction contracting sector, 8% v 13% UK in professional services firms.

- In Wales nearly all employers experiencing recruitment difficulties had taken some steps to try and overcome them (97% v 66% UK), most often trying new recruitment methods or channels (65% v 32% UK), increasing trainee programmes (24% v 10% UK) or increasing advertising / recruitment spend (8% v 6% UK).

4.2.1 The Causes of Skill Gaps

In Wales, the most common cause of skills gaps is that staff lack experience or have been recently taken on, a contributory factor for almost four in five of employers with skills gaps (86% v 61% UK).

The relatively encouraging aspect of this cause is that these skill gaps could be expected to be relatively short-term, easing as these employees gain experience and get to understand that company's way of operating.

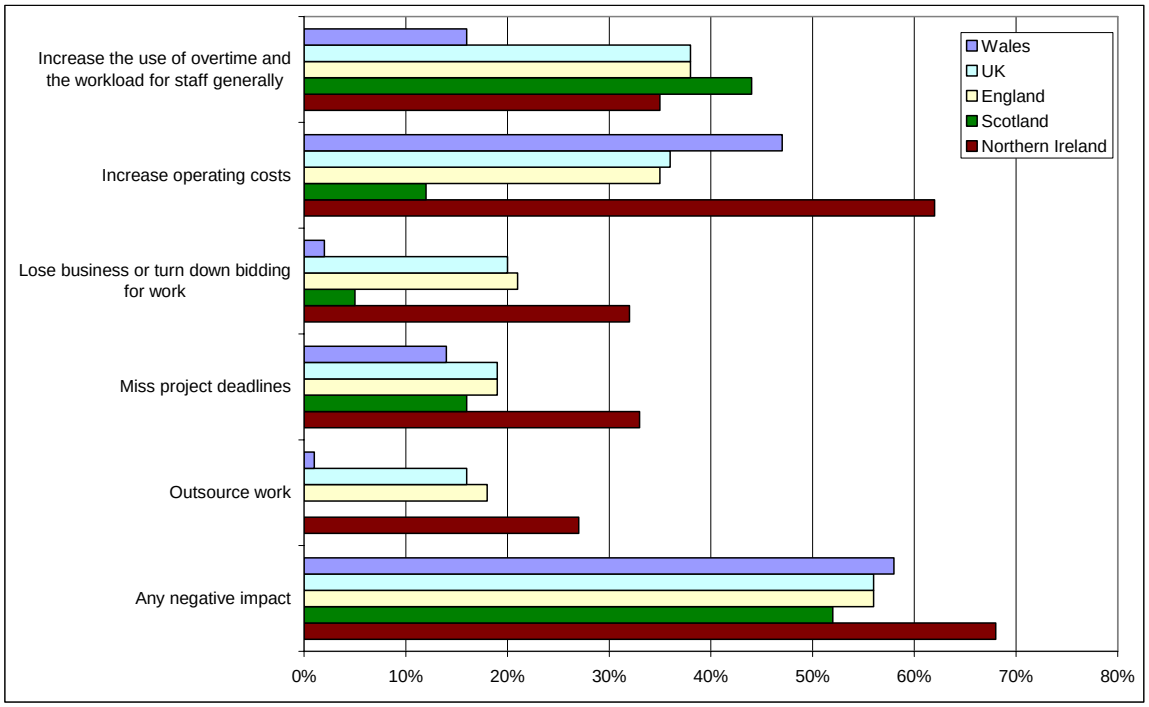
At the UK level, there was some variation in the causes of skills gaps between the professional services sector and the construction contracting sector. Results suggest that professional services firms experiencing skill gaps are particularly likely to believe they are caused by an inability of staff to keep up with changes in the industry (62% v. 30% among construction contracting sector employers).

Again at UK level only relatively few self-employed respondents felt they lacked skills, but predictably the reasons they give as to why they lack skills are somewhat different to employers, with by far the most common reason, mentioned by 64%, being that they lack the opportunity or time. Some admitted that they lacked experience (14%), but this is far less of a cause of skill gaps among the self-employed than among the directly employed workforce.

4.2.2 The Impact of Skill Gaps

In Wales, just over half of employers with skill gaps felt at least one of these negative consequences had arisen as a result of having staff lacking proficiency (58% v 56% UK). In Wales, this was most often increased operating costs (47% v 36% UK) and increased workload and use of overtime (16% v 36% UK).

Chart 19 - The impact of skills gaps



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

In Wales, the majority of those with skill gaps (68% v 79% UK) have taken some action to overcome the difficulty, most commonly more supervision of staff (32% v 11% UK) and increasing training activity and or spend (27% v 60% UK).

The proportion of employers with skills gaps taking steps to address skill shortages, and the actual steps being taken, were very similar to those found in 2008, suggesting fairly standard industry responses to these issues.

4.2.3 Upskilling the Workforce

In Wales, seven in ten employers (72% v 71% UK) felt there were factors likely to lead to changing skills or knowledge needs in the coming 12 months. At UK level only, two thirds of the self-employed (66%) felt this. By company size this rose to nine in ten (90%) among companies with 25 or more staff, perhaps suggesting greater awareness in these firms of upcoming issues in the industry, maybe a result of managers being able to be slightly more removed from the coalface.

In Wales and in the UK the area most mentioned where employees would need to acquire new skills in the next 12 months was legislation/regulatory requirements (62% v 52%). Just under half thought new skills would be needed to utilise new equipment/technologies (49% v 42% UK) and develop new products/services (49% v 40% UK). In Wales, new skills needed to deal with the downturn in the economy were mentioned by fewer respondents than the UK (20% v 31% UK).

In both Wales and the UK, perhaps unsurprisingly, the single occupation most affected by the need for new skills in the construction contracting sector was Managers / Directors (21% v 22% UK). Other than this occupations mentioned were technical staff (13% v 4% UK) and those that cover a number of occupation roles i.e. staff who multi-task (12% v 13% UK). In the professional services sector, the occupations thought to be most affected by the need for new skills were technicians (19% v 6% UK) and Architects (12% v 17% UK). Various other occupations were mentioned by no more than 7% of respondents.

4.3 Constraints on Activity

In Wales, when asked what factors limited their business now and were likely to impact in the future, predictably the recession and low or uncertain demand were top of mind – as many as 52% v 56% UK mentioned this as a current limiting factor for their business and 62% v 66% UK expected it to act as a constraint over the next 12 months.

Labour shortages and skills shortages were mentioned by very few employers as a limiting factor now or in the near future, confirming that demand-side not supply-side issues are currently seen as critical by employers.

These findings are directly comparable with Construction Forecast Research data[108] which reported the biggest constraint to be insufficient demand (also 56%) and no employers reported labour shortages to be a constraint on activity.

In Wales, many more employers anticipate constraining factors on their business for the coming 12 months than feel there are current constraints. Results indicate increased pessimism compared with 2008[109]: in 2008 17% v 29% GB anticipated no constraints for the coming 12 months; among the same group in 2009 this had fallen to 3% v 14% GB.

4.4 The Migration Advisory Committee: Skill Shortage Occupations

Asking employers themselves about skill shortages and gaps is a vital means of identifying skill deficiencies. However, measuring skill shortages, in particular, is not straightforward and there are other important indicators of 'shortage'. In 2008 the Migration Advisory Committee recommended a skill shortage occupation list[110].

This list applies to the whole of the UK. Although there is supplementary list for Scotland the work plan did not allow the production of a supplementary one for Wales. In fact the Migration Advisory Committee were not convinced that separate shortage occupation lists for each region and country of the UK were desirable or practicable. They suggest that it would probably not be sensible for immigration policy to provide special dispensation to fill vacancies if there is not a national (UK) shortage.

In order to be placed on this list the occupation must pass three hurdles: it must be *skilled*; there must be a labour *shortage*; and it must be *sensible* to bring in non-EEA labour to fill the shortage

More recently the Migration Advisory Committee presented their review of the recommended shortage occupation lists[111] and noted that although rising unemployment, falling employment and vacancies and a high redundancy rate indicate that the labour market is in turmoil, it should not be assumed that all labour shortages disappear. Although they do acknowledge that the removal of some construction-based occupations from the original list is in response to changing economic circumstances.

The updated recommended shortage occupation list contains the following occupations which are specific to the UK construction industry:-

- Civil engineers
- Mechanical engineers
- Welding trades

[108] Construction Forecast Research, Construction Industry Focus, September 2009
[109] ConstructionSkills, Skills and Training in the Construction Industry, 2008. A telephone survey of 975 employers and 150 sole traders/self-employed operating in the UK construction sector (covering the construction contracting sector), the sample included 59 interviews with employers in Wales.
[110] Migration Advisory Committee, Skilled, Shortage, Sensible: The Recommended Occupation Lists for the UK and Scotland, 2008
[111] Migration Advisory Committee, Skilled, Shortage, Sensible: Review of the Recommended shortage occupation list for the UK and Scotland, 2009

The inclusion of these occupations on the skill shortage list will be reviewed in Autumn 2010.

Following consultation with a wide range of stakeholders, including ConstructionSkills, the Migration Advisory Committee will publish its report to the government on the level for 2011/12 of the annual limits on economic migration to the UK under Tier 1 and Tier 2 of the points-based system on 18th November 2010.

As part of the response to this consultation process, ConstructionSkills were of the opinion that if migration levels from non-EU states are reduced by legislation, the industry will need to draw from other sources including the UK or from EU (especially Ireland). Problems will occur if the upturn is quicker than expected and there is an immediate requirement for skilled professionals and operatives. If they are not immediately available there will be pressure for employers to get them wherever they can and the construction work won't wait for them. As discussed earlier many employers have stopped or reduced recruitment it will therefore become even more important for employers to be supported in up-skilling existing employees and potential future employees.

4.5 Unemployment

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

In Wales, research[112] in the professional services sector found that just over half of firms (62% v 46% UK) had to make redundancies due to the recession in the past 12 months. Whilst it is not possible to know whether these professionals have been re-employed within the industry, it would seem unlikely as approximately half of firms also stated that they had to cut back on recruitment (54% v 46% UK). Therefore it can be assumed that the professionals made redundant had either moved into another industry (data available at UK level only, 3.9%[113] of outflows from construction were to other industries) or more likely they were currently unemployed.

At UK level the biggest outflow (now standing at 4.6%[114]) from the industry is to unemployment; its highest level over the 15 year period. In both Wales and the UK, as unemployment is considerably higher in the construction contracting sector (16.1% v 9.8% UK) than for professionals (3.1% v 4.0% UK), it can be assumed that redundancies are affecting the whole construction industry.

[112] ConstructionSkills and Construction Industry Council, Impact of the Recession on Construction Professionals, 2009 Unpublished, Telephone survey with Professional services firms; initial qualitative phase involving 30 firms followed by quantitative phase with 301 firms, the survey included 13 interviews with employers in Wales note low base size.
[113] Labour Force Survey, Spring 2010
[114] Labour Force Survey, Spring 2010

The table below shows by nation the current unemployment rate for the construction industry compared to that for all industries.

Table 18 - The unemployment rate in the Construction Industry and All Industries, by UK nation (UK: 2010).

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

Source: Office for National Statistics, Labour Force Survey

As the data highlights, the construction industry has been significantly affected by the economic downturn, with the unemployment rate higher for every UK nation than the corresponding rate across all industries. At greater than 14% unemployment, Wales has the second highest construction industry unemployment rate of the UK nations, it should be noted though, that it also has the highest unemployment rate across all industries of the UK nations.

The impact of the recession across the construction industry has radically affected the mismatch between demand and supply of labour. Whilst 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 previous recessions. 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

Far fewer employers in 2009 reporting shortages of skilled staff over the previous 12 months compared with 2008.

In 2009 in Wales just over one in ten employers (12% v 8% UK) felt that there had been times when they lacked the number of skilled workers they required.

In 2009 in Wales around half (51% v 52% UK) felt that they had been operating at around full capacity given the number of skilled staff they employed.

In 2009 in Wales just over a third (35% v 33% UK) had not had enough work for their workforce.

The recent Construction Products Association Trade Survey (Q2, 2010) reported that 13% of building contractors had difficulties in obtaining the main site trades, a complete contrast with the 80% figure seen three years ago.

Although the sample was very small in Wales, where a lack of skilled workers was cited, the implications appear to be quite severe. In 2009 just under 1 in 10 reported having to turn work down as a result (9% v 67% UK) and just over one third had been forced to sub-contract (34% v 52% UK). More specific research including a larger sample in Wales is needed to understand these potential differences.

In Wales in 2009, just over three in ten employers trying to recruit skilled staff reported some of these vacancies as being hard-to-fill (31% v 29% UK), equivalent to 14% v 10% UK of all employers experiencing recruitment difficulties for skilled staff in the previous 12 months.

In Wales in 2009, it should be noted that the most mentioned cause of hard-to-fill vacancies was applicants lacking the motivation / attitude that is looked for (84% v 74% UK), although with the sample available this figure appears broadly similar to the UK level.

In Wales in 2009, overall just over one in ten employers (14% v 10% UK) have staff lacking proficiency. At UK level only more than one in six of the self-employed (17%) regard themselves as having a skills gap.

In Wales in 2009, the most common cause of a skills gap is that staff lack experience or have been recently taken on, a contributory factor for almost four in five of employers with skills gaps (86% v 61% UK).

Labour shortages and skills shortages were mentioned by very few employers as a limiting factor now or in the near future, confirming that demand-side not supply-side issues are currently seen as critical by employers.

In Wales the current unemployment rate across the construction industry is 14.5% v 8.8% UK, across all industries in Wales it is 7.2% v 6.3% UK.

5. The demand for new skills and changing patterns of employment

This section examines the evidence for what are expected to be the main drivers for skills change in the construction industry over the next ten years, and what implications these may have for the types of skills that firms will need to operate successfully in 2020.

5.1 PESTLE Analysis

A standard way of grouping the drivers for change is under the broad headings of Political, Economic, Social, Technological, Legal, and Environmental (PESTLE). Some of these drivers are already known and in place, although their full impact on skills may not be known; while others may be foreseen by those with knowledge of the industry and who are, therefore, aware of trends and undercurrents that may lead to the requirement for new skills in the future.

The table below offers a PESTLE analysis summarising the drivers for skills change that are expected over the next ten years. 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.

Table 19 - PESTLE Analysis – Wales and UK

Political	**Social**	**Legal – Legislation**
➢ Welsh policy e.g. One Wales ➢ Welsh Assembly election in 2011 ➢ National Policy Statements, e.g. Energy. ➢ Housing Policy. ➢ Skills White Papers. ➢ Targeted funding. ➢ Immigration. ➢ Devolved policies. ➢ Energy security.	➢ Rising unemployment levels. ➢ Demographics – ageing workforce. ➢ Image of construction industry. ➢ Housing shortage. ➢ Immigration/Migration.	➢ Health & Safety legislation. ➢ Banking legislation – impact on lending, credit insurance, private finance. ➢ Environmental legislation and targets ➢ Welsh Assembly Measures, learning and skills, learner travel, local government. ➢ Welsh Assembly Legislative Competency Orders education, housing, environment. ➢ Sustainability (see environmental below).
Economic	**Technological**	**Environmental**
➢ Public deficit – effect on public finance and ability of governments to invest in construction. ➢ Availability of private finance. ➢ Where will public investment go? ➢ Energy prices. ➢ Carbon trading. ➢ Double Dip recession.	➢ Modern methods of construction. ➢ Energy infrastructure. ➢ Low – Zero Carbon technology. ➢ Offsite manufacture.	**Climate Change** ➢ 80% reduction of 1990 CO_2 levels by 2050. ➢ Reduce greenhouse gas emissions by 3% a year by 2011 **Waste** ➢ Wales to be zero waste by 2050. ➢ 70% recycling rate across all sectors by 2025. **Planning/Zero carbon** New Builds: ➢ Housing – reduction in CO_2 emissions of 55% compared to 2006 by 2013. ➢ Schools – zero carbon schools by 2017. ➢ Public sector buildings – zero carbon by 2018. ➢ Green jobs. ➢ Code for sustainable houses. ➢ BREEAM. ➢ Environmental management systems

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.

In order to better understand which of these are the most important drivers for skills change, and what impact they may have upon construction companies, ConstructionSkills commissioned the research agency Pye Tait to gain the views of employers and industry experts on the developments they expect to see. Their report 'Understanding Future Change in Construction' established an evidence base for the changing nature of construction[115].

The Understanding Future Change report identified 5 key drivers across the construction industry as a whole in Great Britain that will have a significant impact upon the nature of its work; these can be broadly classified as (i) the economy, recession and commercial drivers; (ii) policy and legislation; (iii) research and development; (iv) procurement processes; and (v) information and support. Examples of each of these will be found in the PESTLE analysis above.

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. Respondents from all sub-sectors and all nations indicated that planning for what can be achieved in the future in the current uncertain economic climate is particularly difficult.

The recession bought with it massive job losses to the construction industry, and despite officially ending in the fourth quarter of 2009 the onset of economic recovery did not mark a recovery in employment. Indeed, despite two quarters of surprisingly strong growth[116] construction unemployment is not expected to peak until 2011, when it will have reached 400,000 (a 15% increase since the start of the recession).[117] The picture for Wales is similar, with negative construction employment growth until the end of 2011. In 2015, total construction employment in Wales is projected to reach 107,500 down on the 2008 outturn but around 9.8% up on the 2010 figure.

A priority for the industry in the medium term, therefore, will be to recover the large swathe of basic construction skills, from craft to professional and managerial, that have been lost.

Since the 'Credit Crunch' banks have become more cautious in their lending to support construction and property development - 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, Modern Methods of Construction which utilise these new technologies are expected to drive long term skills change in some sectors of the industry, in the short to medium terms however this commercial factor will act as a brake on their adoption, at least amongst small businesses.

Consistent recovery is not forecasted until 2011 and even then, it is likely to be a slow and steady return to moderate levels of growth as confidence gradually returns to the market. The UK average forecast[118] is for 1.0% growth in output from 2011-2015, much

[115] A multi-faceted approach was adopted, to gather data through a range of separate routes: a literature review; four focus groups with representatives from nearly 70 stakeholder organisations; and 29 in-depth qualitative telephone interviews with key stakeholders in the construction sector across England, Wales and Scotland, to explore the emerging issues in more depth.
[116] Office for National Statistics Statistical Bulletin 3rd Quarter 2010, 26th October 2010
[117] ConstructionSkills Network Blueprint 2010 – 2014
[118] ConstructionSkills and Experian, Construction Skills Network, 2010. Note the figures used here are based on revised model forecasts that follow the publication of the Comprehensive Spending Review and

lower than the decade preceding the recession when it stood at 2.5%. In Wales the forecast is for growth of around 1.2% per year between 2011 and 2015, slightly higher than the UK rate of 1.0%.

Despite this slow growth, the need for new entrants will be relatively high as there are a large number of workers who are set to leave the industry in the next 10 years through retirement.

So what are the implications of the continued economic uncertainty for skills in the industry? In 2009 the research agency IFF undertook a survey of construction Professional Services[119], examining how they were coping with the recession. The specific findings for professionals are outlined below, however, 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[120] 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. Given the difficulties in planning mentioned by many employers in the Pye Tait survey, greater management skills will be required as firms attempt to be as flexible as possible, operate profitably in a competitive environment, and make the best use of the skills of their current workforce. 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.

Draft Budget for Wales. It may be that further revisions are made to these forecasts as more data becomes available.

[119] ConstructionSkills and Construction Industry Council, Impact of the Recession on Construction Professionals, 2009 Unpublished, Telephone survey with Professional services firms; initial qualitative phase involving 30 firms followed by quantitative phase with 301 firms, the survey included 13 interviews with employers in Wales note low base size.

[120] 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.

5.3 Long term skills drivers

5.3.1 Policy and legislation

The legislative drivers for change in skills and employment are primarily concerned with low and zero carbon targets, and associated regulations that are scheduled to impact upon the construction sector in the short, medium and longer-terms.

Wide-ranging legislative targets driven by the 'green' agenda and policy-makers are already impacting on parts of the sector, notably domestic and commercial construction as outlined in Table 20 below.

Table 20 – Main UK government strategies for addressing energy efficiency

Strategies	Details
Building Regulations	Changes to part L (energy efficiency) come into effect in England in October 2010. Will be further reviewed in 2013 and 2016, in line with energy requirement of Code for Sustainable Homes.
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

Specific government strategies for Wales are detailed in section 2.2.8.

5.3.2 Technology

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. Although innovation has not been seen as a key aspect of the construction industry in previous years, it is suggested that this could be improved by 'greater internationalism, greater competition, and greater integration in the supply chain'.[121] Also, as one of its benefits is increased energy efficiency, it is likely that its use will be come more widespread as Environmental and Sustainability Legislation becomes more stringent.

According to the Callcutt Review[122], some 70% of homes built in the UK could include some modern methods of construction by 2016 much of it driven by tightly controlled processes to improve construction efficiency, improve productivity, and minimise waste, particularly on new build sites. By comparison in 2005 the proportion of homes using such methods stood at 24%, the majority of which were timber frame or light metal

[121] Experian and SAMI Consulting, 2020 Vision: The Future of UK Construction: Executive Summary, 2009
[122] Department for Communities and Local Government, The Callcutt Review of housebuilding delivery, 2007

frame. In the short to medium-term, MMC's impact on new-build is likely to be greater on larger, new work, building projects where repetition of components will justify the investment in off-site methods.

Currently 12% of all construction activity is manufactured offsite and this requires ongoing skills links with the manufacturing sector. The implications for site-based skills arising from off-site MMC could be significant over the period to 2020, but there are limits to its application. 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.

MMC is not widely considered to have a very significant effect on the repair and maintenance market, which accounts for over 40% of total UK construction output, and in employment terms, around 60-70% of the workforce. Civil engineering projects are also not likely to be greatly affected as they already use a significant proportion of pre-cast components, whether manufactured on-site or off-site, in contrast, new housing offers significant opportunities.

Technically, MMC for building homes is already achievable and already occurs on a more significant scale in some overseas markets; a combination of cost, skill, inertia, required levels of investment, and level of demand, and the attitude of home buyers and developers appear to be the main constraints on greater use in the UK at present.

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.

Summary Box

- Construction employment in Wales is forecast for decline until the end of 2011.In 2015, total construction employment in Wales is projected to reach 107,500 down on the 2008 outturn but around 9.8% up on the 2010 figure.
- In Wales the forecast for output growth is around 1.2% per year between 2011 and 2015, slightly higher than the UK rate of 1.0%.
- 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
- In Wales 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 Welsh workforce, (including the essential skills of numeracy, literacy and ICT), encourage higher value-added jobs and enhancements to productivity.
- Modern Method of Construction (MMC) and off-site manufacture of components that are later installed on site are likely to influence the future structure of the industry.
- 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 Wales 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[123] 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.

[123] ConstructionSkills and Experian, Construction Skills Network, 2010. Note the figures used here at the time of writing have not been finalised and are likely to be revised down in light of revisions made to the model following the publication of the Comprehensive Spending Review and Draft Budget for Wales.

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.

6.3 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[124] 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 reduced 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 Wales' construction industry.

6.4 Short to Medium term forecast for construction employment in Wales

Total construction employment in Wales is forecast[125] to reach around 107,500 by 2015.

All occupational groups are expected to increase slightly over the forecast period. The Repair and Maintenance sector will be responsible for most of the growth in employment.

The average annual output growth for output in Wales is forecast at 1.2% per year between 2011 and 2015, higher than the UK rate of 1.0%.

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

The ARR[126] for the 26 occupational groups within construction industry in Wales between 2011 and 2015 is illustrated in the table below. The ARR of 4,680 is indicative

[124] Comprehensive Spending Review, 20th October 2010
[125] ConstructionSkills and Experian, Construction Skills Network, 2010. Note the figures used here are based on revised model forecasts that follow the publication of the Comprehensive Spending Review and Draft Budget for Wales. It may be that further revisions are made to these forecasts as more data becomes available.
[126] ConstructionSkills and Experian, Construction Skills Network, 2010. Note the annual recruitment requirement at the time of writing has not been finalised and is likely to be revised down in light of revisions made to the model following the publication of the Comprehensive Spending Review and Draft Budget for Wales.

of the average requirements per year for the industry, as based on the output forecasts for the region.

Table 21 - Annual recruitment requirement by occupation - Wales

Occupation	2011-2015
Senior, executive, and business process managers	<50
Construction managers	280
Non-construction professional, technical, IT, other office-based staff	680
Wood trades and interior fit-out	1130
Bricklayers	310
Building envelope specialists	180
Painters and decorators	310
Plasterers and dry liners	<50
Roofers	<50
Floorers	<50
Glaziers	170
Specialist building operatives nec*	130
Scaffolders	<50
Plant operatives	<50
Plant mechanics/fitters	<50
Steel erectors/structural	<50
Labourers nec*	420
Electrical trades and installation	90
Plumbing and HVAC Trades	320
Logistics	190
Civil engineering operatives nec*	<50
Non–construction operatives	-
Civil engineers	100
Other construction professionals and technical staff	100
Architects	<50
Surveyors	60
Total (SIC 45 and 74.2)	**4680**

* not elsewhere classified
Source: ConstructionSkills and Experian, Construction Skills Network, 2010
Note the annual recruitment requirement at the time of writing has not been finalised and is likely to be revised down in light of revisions made to the model following the publication of the Comprehensive Spending Review and Draft Budget for Wales.

The largest ARRs in Wales are expected to be for wood trades and interior fit out and labourers nec* all with a requirement of over 400. 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 and its effects on the construction industry many of the occupational ARRs in Wales 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 Wales. 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.

6.5 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 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 specifically relating to low carbon in Wales have been discussed in detail in Section 2. The broader UK trends 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 2010 to stimulate demand for microgeneration[127] 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
- Commercial – building regulations, energy efficiency
- Industrial – building regulations, energy efficiency

127 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.

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 an 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 Wales is forecast to reach around 107,500 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 Wales' construction industry between 2011 and 2015 is predicated to be 4,680.

- 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 inherent in any forecast. The repercussions of the recession are still being felt across the industry and as the path the recovery is taking becomes clear, more accurate analysis of the future supply of skills and employment is possible.

It is interesting to note that, in output terms, construction has been through a double dip recession, and while official statistics have appeared to show construction growing strongly in recent months[128], certain sub-sectors have and will be undoubtedly affected by public expenditure cuts; in general there appears to be a measure of continuing uncertainty across the industry regarding the immediate future[129].

In determining what affects the future supply of skills and employment, there are some conclusions that can be tentatively drawn from existing authoritative reports. This section will draw from the Working Futures report[130], as well as 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.

When attempting to understand the future of a fluid and rapidly changing environment such as the whole area of skills supply and employment there is sometimes no better substitute than looking at previous, similar, events and drawing from what has happened in the past. This section will do this as well, particularly in terms of how the skills market recovered following the last two major recessions in the UK from 1980-82 and 1990-92.

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 their 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).

As discussed in earlier sections, aspects such as the economy, industry, demographics and politics will all have a bearing upon the supply of skills and employment for the construction industry

7.1.1 The Economy

Section 6 set out a 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. At UK level it predicts that GDP growth is low, at least in comparison with the pre-recession years – averaging only around 1.6% growth between 2011 and 2015 and that public debt remains high hampering state spending. According to ConstructionSkills Network[131] figures the economy in Wales is expected to grow at an annual average rate of 1.2% between 2011 and 2015, higher than the UK as a whole (1.0%).

[128] Office for National Statistics, Gross Domestic Product Preliminary Estimate, Statistical Bulletin Q3 2010
[129] Construction Trade Surveys: Includes surveys undertaken by Experian, Civil Engineering Contractors Association (CECA), Federation of Master Builders (FMB), Construction Products Association (CPA) and National Specialist Contractors Council (NSCC)
[130] 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
[131] ConstructionSkills and Experian, Construction Skills Network, 2010

Demand is one of the key drivers for skills and employment supply and it would be safe to say supply, especially in terms of formal training, will remain subdued until well into the medium-term.

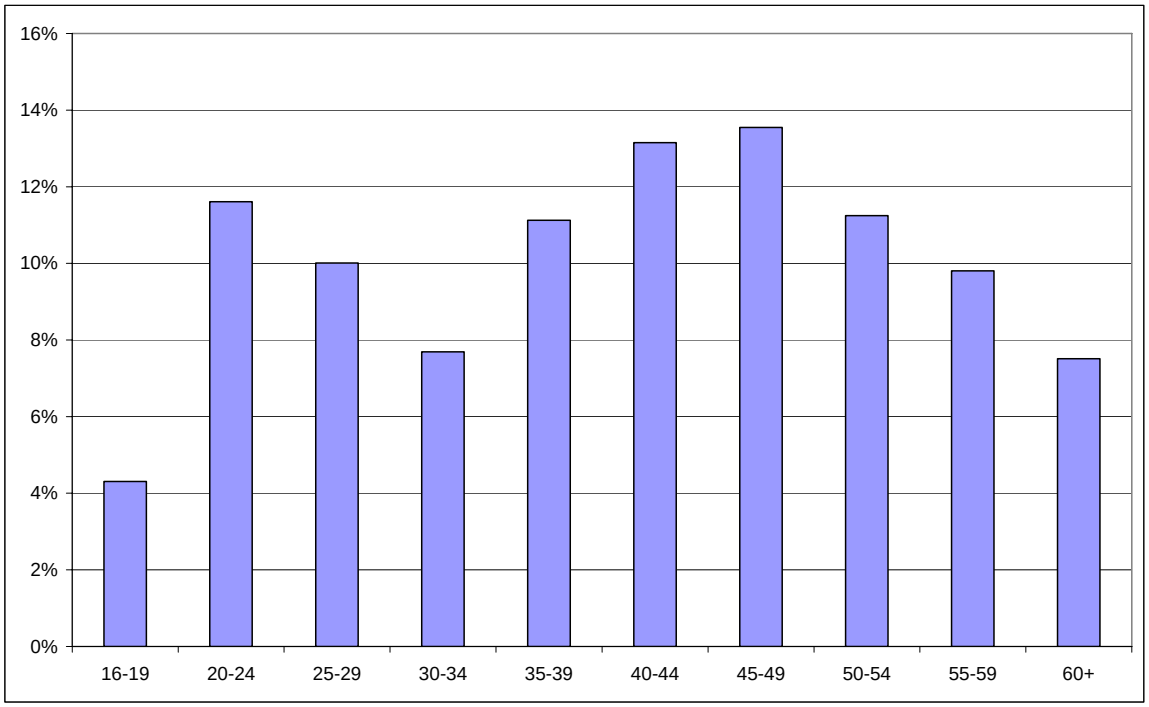
Over the medium to long term things are projected to be more optimistic. The Working Futures report[132] predicts Construction output growth in Wales at 1.7% per annum through to 2017, in line with UK and above Northern Ireland forecast rates over the same period (UK 1.9% per annum, England 1.9%, Scotland 1.8% and Northern Ireland 0.2%).

It would therefore seem likely that from around 2015 onwards the supply of skills and employment will begin to increase in response to the rising demand that is expected.

7.1.2 The Industry

In Wales over the course of the present forecast approximately 17% of the manual construction workforce will reach retirement age (see Chart 20), resulting in a loss of accumulated skills and experience - particularly those involved in the heavier trades and labour.

Chart 20 - Proportion of Manual Workers in Welsh 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 current recession and downturn in recruitment unless economic circumstances force later retirement, certain skills are likely to become less available. If reliance is to be put on an ageing workforce, compensatory changes in workload on-site will be necessary.

Chart 20 also demonstrates the lasting impact of the previous recession with the dip in the proportion of people in the 30-34 age group reflecting the fall in recruitment for manual occupations that occurred during the last recession. The latest forecast by the Construction Skills Network[133] predicts that this pattern will be played out again in the current recession, with rapidly rising job losses leading to rising skills deficits.

[132] 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
[133] ConstructionSkills and Experian, Construction Skills Network, 2010

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

The population[134] of Wales is expected to grow by 172,000 between 2008 and 2020 to reach almost 3.2 million people. The increase in working age population (16-70) is much lower, however, at 41,000; and when looking specifically at the male working age population (construction being a predominantly male-dominated industry) the increase is 26,000 people between 2008 and 2020, or approximately 2,200 males per annum.

7.1.4 Political Initiatives

Political initiatives for Wales have been detailed in Section 2.

In general, given the need for a healthy economy, raising opportunities for training and learning are still key priorities, and those in power across the nations will be keen to show they are committed to investing in the future of the construction workforce.

The changes in demand noted above and in earlier sections will result in needs for 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 at the preceding sections and 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 be ignored as it does not contribute to the UK stock of skills, 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 retraining in order to meet the skills demands already discussed.

7.2.1 Craft Training

The main supply of skills has traditionally been via work-based training, and there is no reason to think this will be any different in the future. 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.

According to the ConstructionSkills Network[135] total construction employment in Wales is forecast to 107,500 down on the 2008 outturn but around 9.8% up on the 2010 figure.

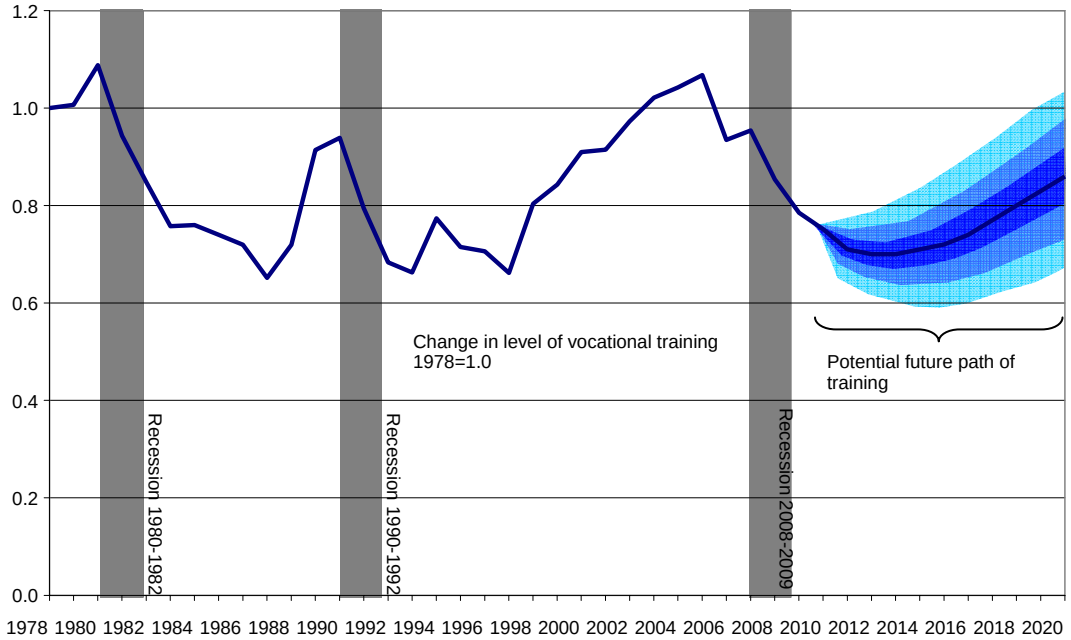
To link employment and training precisely is difficult, and indeed would probably vary depending on which point in the economic cycle a measurement is taken. Having said this, a very high level view can be gained from looking at the past two recessions, and what happened to training in their aftermath.

[134] Office for National Statistics, 2008-based National Population Projections, released October 2009
[135] ConstructionSkills and Experian, Construction Skills Network, 2010

Unfortunately historic training data (previous to 1997) is not available for the devolved nations although we can draw a parallel using GB data. Before the current recession the two previous recessions in the UK were in 1980-82 and 1990-92. As can be seen in chart 21, training 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.

Charting future trends based on historic scenarios is clearly not an exact science. 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 21 - Relative change in levels of construction training 1978 – 2020: GB



Source: ConstructionSkills Trainee Numbers Survey

Chart 21 depicts the probability of various outcomes for vocational training based on possible changes in employment. The bands widen as the time horizon is extended, indicating the increasing uncertainty about outcomes. Although training is expected to return to its pre-recession levels by 2020 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.

Previous years have seen a marked increase in the success rates for NVQs. With the introduction of the new Credit and Qualifications Framework for Wales (CQFW) it is

likely that success rates will improve further. The current Work-Based Learning success rate for Construction, Planning and the Built Environment in Wales is 78%[136].

Having achieved a qualification, a very high proportion of people choose to stay in construction. The Construction Apprentices Survey[137] suggests at UK level 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 in Wales, The Higher Education Policy Institute (HEPI) have produced a report[138] 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 and devolved nations.

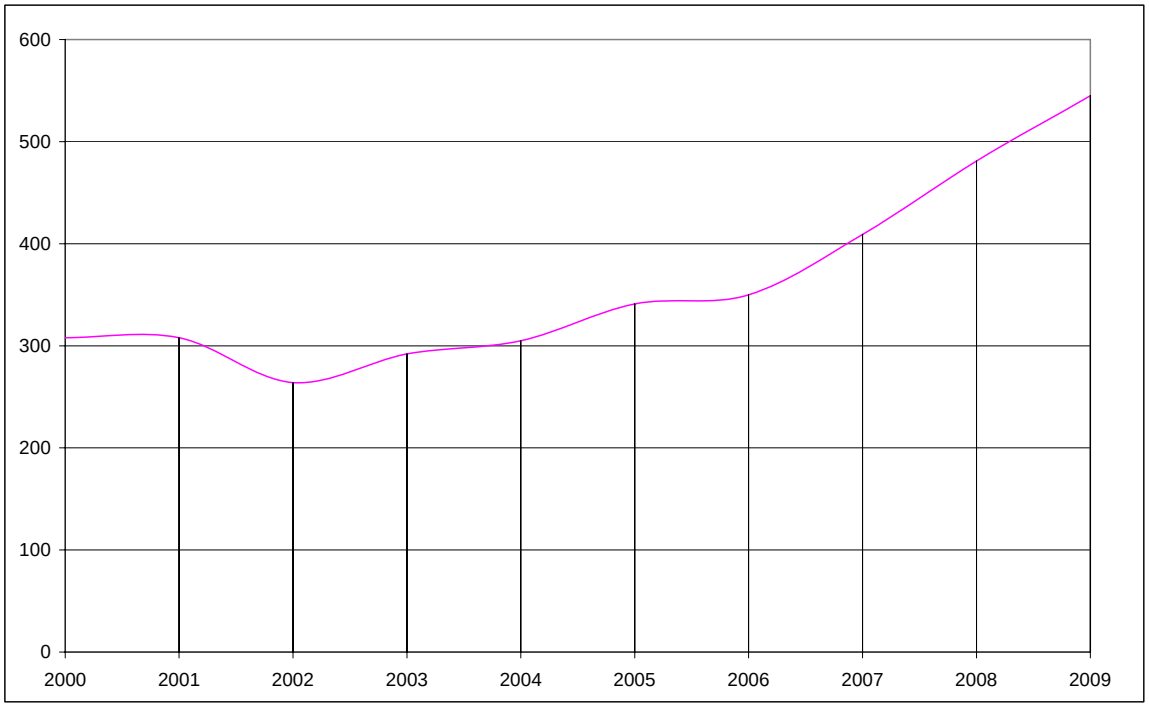
The HEPI report considers three factors that influence demand for Higher Education – changes in the population from which students are drawn; the ability (in terms of qualifications) of those people to enter higher education; and the willingness (in terms of social background) of this population to participate 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 (in Wales[139] 65% of full time higher education first degree entrants are under 21 and 87% are under 30).

Chart 22 shows UK domiciled applications to Built Environment degree courses in Wales from 1996-2009. In Wales the number of applicants to Built Environment degree courses has increased every year since 2002, with 2009 seeing an 13% increase in UK domiciled first degree applicants compared to 2008.

[136] Welsh Assembly Government, Work-based Learning Success Rates 2008/09, http://wales.gov.uk/topics/statistics/headlines/post16education2010/1005131/?lang=en, 2010
[137] ConstructionSkills, Construction Apprentices Survey, 2007
[138] Higher Education Policy Institute Bahram Bekhradnia and Nick Bailey, Demand for Higher Education to 2029, 2008
[139] Higher Education Statistics Authority 2008/09 enrolments, 2010

Chart 22 – Wales, UK Domiciled applicants to Built Environment degree courses 1996 – 2009



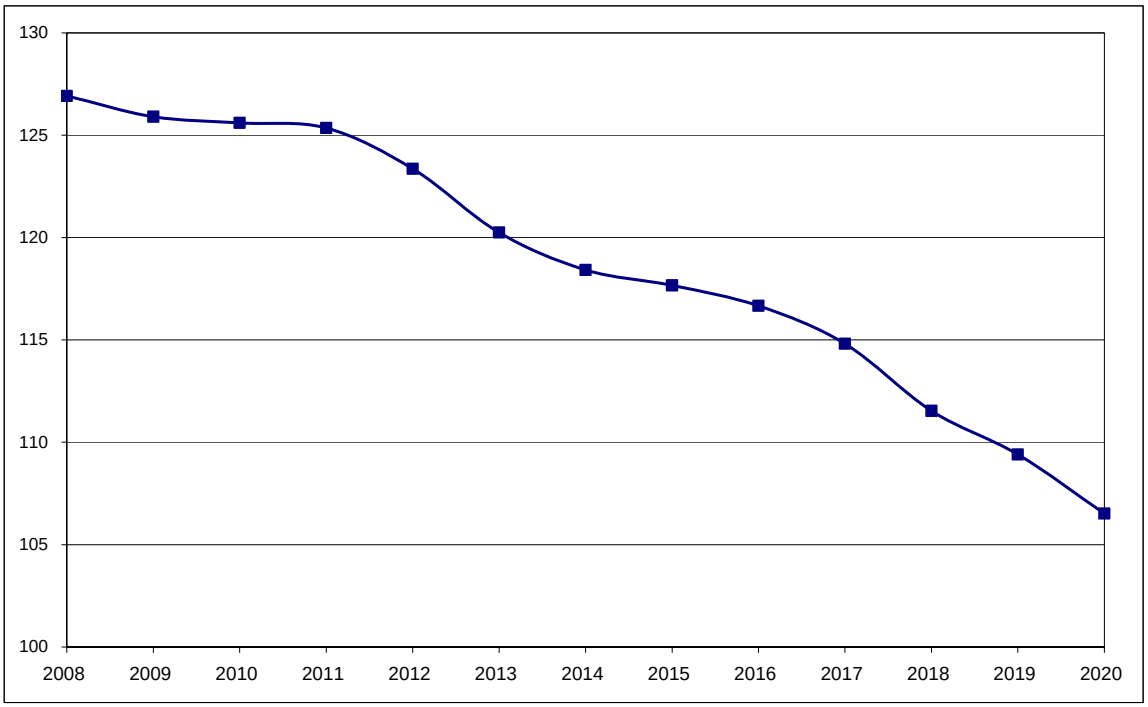
Source: UCAS

For the future HEPI offer two projections, the first based on changes attributable to population-related factors alone – this is the base projection that will be realised if there are no changes in participation patterns – and a high variant, based on males catching up half the difference between the current performance relative to females in full time participation, and also half of those with 7 or more GCSEs who currently fail to achieve a Level 3 qualification doing so in future.

The following chart shows the way the 18-20 year old population in Wales is forecast to change in the next 10 years. The forecast is for a downward trend over the next decade, with the 18-20 year-old population declining by more than 15% 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 Welsh Assembly Government Higher Education Strategy[140].

[140] Welsh Assembly Government, For Our Future, The 21st Century Higher Education Strategy and Plan for Wales, November 2009

Chart 23 – Number (000s) of 18-20 year olds in the population of Wales from 2006 to 2020



Source: Office for National Statistics 2008-based National Population Projections, released October 2009

While the above graph may seem to point to an impending downturn in the number of higher education students, HEPI point to a 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 calculate that, in the absence of other demographic changes - differential births by different social groups will lead to a 5% increase in the proportion of the under 21 age group participating in higher education by 2020-21.

Whilst it is clear that not all these people will stay in full-time education, there are real reasons to believe that many will; especially now they are required to continue in post-16 education or training by law. HEPI believe that "This reform, in view of the large numbers at present leaving education at 16, could have the largest impact on HE participation since the introduction of GCSEs in 1988".

Demography provides the basis for HEPI's assessment of future demand. In the absence of other factors they believe that demand, having peaked in 2010 will fall back below 2007 levels by 2020-21. However, they see strong reasons for believing that participation rates will increase, which will mitigate some, and possibly all, of the declines expected due to demographic changes.

Two major factors that had not come into play at the time of HEPI's report were the recession and more recently the review of Higher Education undertaken by Lord Browne. In considering the first of these, at present there is more likely to be strong pressure for young people to remain in education. 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 participation in higher education.

Additionally, the recently released Browne Report will influence decisions on the provision of Higher Education in the UK in coming years. The recommendations relating to the 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[141].

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 preceded this period will be repeated.

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[142] 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

Data provision for migration is extremely limited and the data that is available is generally only at UK level. According to Labour Force Survey[143] data, inflows of migrant workers into construction reached a peak in 2006 of over 11,000 workers before declining to just fewer than 5,000 in spring 2009. Over the time frame of this report (up to 2020) it is likely that the flow of migrant workers will probably be somewhere between these two figures, probably closer to the 7,000 average figure seen throughout most of the first years of the 21st century.

This view is supported by the Working Futures report which concludes that the previous high rate of immigration is not expected to be sustainable over the medium-term. For the purposes of the present report the key question is – how many of these migrants will be skilled workers, and how many will be unskilled labourers?

There are various measures from the Labour Force Survey from which skills can be estimated. It is worth noting that approximately half of migrant workers to the UK construction industry have been self-employed as opposed to 36% of UK workers[144]. While being self-employed is no guarantee of skills, it points to a general level of competence to work un-supervised.

The industry accepted minimum qualification to operate successfully in the sector is a Level 2 Vocational Qualification. Over four-fifths of migrant from the top five countries of origin, and almost two-thirds of those from other countries, do not meet this minimum criterion. This compares with only 41% of UK national construction workers who have a qualification of lower than Level 2. Likewise UK national manual workers are three times more likely to have a trade apprenticeship than migrant workers from the top five countries of origin, and ten times more likely to have a level 3 qualification (roughly equating to site-supervisor level).

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 recent recession. This section assumes a long recovery with modest annual growth. It assumes a downward trend in the level of inward migration, and a gradual increase in those able and willing to undertake Higher Education courses.

[141] Securing a Sustainable Future for Higher Education: An Independent Review of Higher Education Funding & Student Finance. Available at www.independent.gov.uk/browne-report accessed November
[142] Higher Education Statistics Agency, Destinations of Leaver from Higher Education Survey, 2006
[143] Office for National Statistics, Labour Force Survey, Spring 2009
[144] Office for National Statistics, Labour Force Survey, Spring 2009

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 considers it possible that further education training could return 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.

Although at present it appears that many recent migrants are prepared to stay in the UK, if the economy falls behind other European countries – particularly those in the east – then it would be reasonable to assume a net outflow to other countries, a significant part of this outflow is likely to be former immigrants returning to their country of origin in the light of more favourable economic conditions there than when they left, further weakening the industry's skills base.

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 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, some 95% of successful completers stay in the construction industry, mostly in the trade in which they studied.

Although numbers in higher education are likely to continue increasing up to 2020, the pace of change will be much slower owing to demographic changes in the core 18-20 year old higher education population, which is expected to decline by 15% in Wales between 2010 and 2020.

According to UK level Labour Force Survey data, inflows of migrant workers into construction reached a peak in 2006 of over 11,000 workers before declining to just fewer than 5,000 in spring 2009. Over the time frame of this report (up to 2020) it is likely that the flow of migrant workers will probably be somewhere between these two figures, probably closer to the 7,000 average figure seen throughout most of the first years of the 21st century.

8. Conclusions and Key Messages

8.1 Conclusions

This report, following the framework set out in the main UK report, has used available data sources to highlight the priorities for the Welsh construction industry, setting them in the context of the UK industry. Many of the priorities for Wales are similar to those found at UK level but there are also important major and minor differences, particularly around political initiatives and sustainability. In places, the analysis presented has found gaps in both data availability and reliability for Wales, calling for further in-depth analysis where appropriate. The report has identified many opportunities for the Welsh construction industry, although it is not possible within the confines of this research to find a complete solution to the many issues that surround the industry. Hopefully, it has however drawn out the key themes that cut across construction providing a platform for further future research.

Although Wales itself is relatively small in terms of area when compared to the UK, its construction industry still contributes strongly to both the UK and Welsh economies. The construction industry in Wales employs some 88,700 people as both construction workers and professionals, accounting for 4.1% of the UK construction workforce. With an output in 2009 of £3.8 billion (at constant 2005 prices) the sector contributes 3.9% of the UK construction output.

The impact of the recession on the construction sector in Wales has been nothing short of dramatic in terms of its impact on jobs and workloads. Following two consecutive years of growth, total construction output in Wales declined by 8% to £3.8bn (in 2005 prices) in 2008, the lowest level since 2002. Output remained static in 2009 and is forecast to decline further in 2010 to £3.7bn (in 2005 prices). Whilst a downturn was expected on the back of the credit crisis the speed and depth of the contraction was without precedent. In this respect it has caught out a lot of businesses, particularly in terms of planning in the face of reduced workloads, late payments and increased competition.

The latest construction trade surveys and evidence from ConstructionSkills own surveys including its recent October 2010 Employer Panel indicate the construction industry is still suffering a torrid time. The recent publication of the Comprehensive Spending Review (CSR) provides some outline details of spending plans, however, despite this great uncertainty remains in the construction sector – there are concerns over the housing market recovery, continuing tight credit conditions, and weakening consumer confidence which combine to dampen prospects. It's unclear if the economic recovery will be sustained in the longer term.

There have been widespread redundancies within the industry in Wales, resulting in outflows both to other industries and unemployment. Unemployment in the Welsh construction industry now stands at 14.5%, greater than other UK nations except Northern Ireland. History shows that some of the most experienced workers leaving the industry will not come back, which may cause major problems for Wales to deliver future requirements in respect of affordable housing, schools, hospitals, transportation infrastructure and energy generation schemes; all of which must be completed with minimum impact to the environment.

Nonetheless, despite the current recession forecasts for growth in Wales are positive. The latest ConstructionSkills Network forecast for Wales suggests output in Wales is expected to grow at an annual average rate of 1.2% between 2011 and 2015, higher than the UK rate of 1.0%. Recovery, albeit tentative, is expected from the end of 2011. Infrastructure output growth in the early part of the forecast period will be largely driven by transport projects, with focus shifting to energy later on.

The formation of the National Assembly for Wales, followed by the Government of Wales Act 2006 has enabled the Welsh Assembly Government to bring forward its own programme of legislation. The current coalition government through the One Wales agenda have introduced specific legislation around learning and skills, generally improving access to and provision of learning.

In addition, the Welsh Assembly Government has introduced challenging targets and legislation around sustainability, climate change and waste. These are driven at a high level through the One Wales : One Planet Sustainable Development Scheme and its underpinning strategy documents on climate change, green jobs and zero waste. The aim is for Wales to be zero waste by 2050. In addition, there are challenging climate change aspirations with targets to reduce greenhouse gas emissions by 3% a year by 2011 in those areas where government has devolved competence; with an overall 80% reduction of 1990 CO_2 levels by 2050. Alongside these, there are plans for buildings in Wales to become zero carbon with new build housing to be zero carbon by 2011, new build schools by 2017 and public sector buildings by 2018.

An emerging consensus suggests that for the vast majority of occupations it is likely that new knowledge rather than completely new skills will be required to address the low carbon challenge, although the potential volume of work suggests an increased demand for workers (at least in the short to medium-term). The skills required range from generic skills such as customer/client/tenant services, financial and project management, communication and influencing skills, to the technical knowledge required for the installation of environmental technologies. They also include carbon management, performance assessments and the skills related to historic and heritage properties.

To provide the skills needed there is an established network of FE, HE and private providers that deliver a range of education and training for the construction and built environment sectors. Current evidence points to a growing role for manufacturer based training in relation to knowledge transfer and upskilling. Training in Energy Assessment is often offered by accreditation schemes as well as FE colleges, whilst that for Energy Advice will be provided by a mixture of FE colleges and large employers such as energy supply companies.

At present there is no hard evidence to suggest that current supply is not able to meet demand. This position may change if, as our scenarios and research indicate, there is a more rapid increase in demand. In these circumstances training providers may not be able to respond and there is likely to be insufficient experienced and knowledgeable trainers, educators, and assessors.

In addition to low carbon retro-fit and refurbishment an increased demand for private sector housing (and to a lesser degree public housing) is a fundamental part to securing the sector recovery in terms of driving future growth as funding on large public infrastructure projects is scaled back. The new build housing sector also presents very clear opportunities to lower the sectors' carbon emissions, and it might also provide an opportunity to increase sector productivity and create additional capacity.

At the moment only a small proportion of construction activity is manufactured offsite, but this could increase significantly as the industry moves from recession to recovery and could also change where new clients and funders would seek greater levels of off-site activity. One of the main aims of offsite manufacture is to bring increased control into the build process. This allows better quality control, creates less waste and increases levels of worker safety, which ostensibly leads to increased productivity. At the very least it presents industry with an opportunity to achieve more with less, be it labour, materials or skills. This is particularly relevant if there is a shortage of potential entrants into the sector and may also alter the way certain traditional activities and processes are carried out with defined 'teams' in areas such as new build housing becoming a reality. Housing 'teams', as opposed to the traditional; trades, have been considered in the past as a

possible option for delivery and with an expected increase in offsite manufacture such a change could be considered as an option for the future within some companies.

Current thinking appears to be that, post-recession, the low carbon agenda will result in a significant growth in new 'green' jobs, although this needs to be balanced with the potential for a reduction in jobs as the drive for productivity and efficiency increases and the use of different processes and technologies increases. However, the construction sector of the future will, despite much forecasted change, share many features with the industry of today. The specialist skills demanded to meet the high specifications and low energy requirements of future buildings and infrastructure will require new levels of expertise in terms of product knowledge and will necessarily require both professional services and craft trades working to more exacting tolerances, but reflecting on the structure of the industry and the variety of markets that it serves one must accept that the breadth and depth of this change will not be uniform.

New ways of working will not all require totally new skills or create new jobs, but will often be an addition to existing workers skill-sets. In many cases the skills are either an addition to, or amalgam of existing skills and these skills in the same occupations may vary between how they are applied in the different sub-sectors. It is a fact that many small firms are not currently required to utilise innovative methods and the nature of the markets they serve surely preclude this in the future, at least whilst there is a significant levels of traditionally built stock that largely requires a bespoke site-based approach. Changes in skills requirements are likely to be of equal if not greater significance in management and professional occupations with a number of new functions being considered currently and with further new functions identified as we move further into a low carbon economy.

The implications for skills suggest that there will be increasing demand for higher levels of skills across the industry, especially those at Level 4 and above and skilled trades will remain the dominant grouping for qualifications within the industry, although increased levels of multi-skilling is predicted.

High-quality leadership and management are critical factors in successful businesses. Good leaders and managers are able to identify new market opportunities and recognise the importance of developing the skills and talent of their workforce. Many businesses and individuals already invest substantially in these skills. Universities and other education providers also recognise the critical importance of equipping their students with leadership and management skills as they prepare to enter the workforce and in supporting them through their careers.

Structural changes in the sector, such as the move to off-site production and the whole house refurbishment, will necessitate an over-arching need to develop the ability to interface with other sectors and their supply chains. But again there must be some recognition and appreciation of how and to what extent this will touch firms in the sector. Off-site production and the opportunities afforded by a low carbon future should not be viewed as the panacea for the industry's ills and challenges, which are as much to do with the structural and operational organisation of the sector, its workforce and the way it currently chooses to do business.

The diversity in the nature of construction clients and the difference in the construction firms servicing those markets probably gives us the clearest indication of a growing divergence that exists within the industry in respect of skills needs, but also portends a potentially deeper ideological split in terms of how these very different needs are supported. Understanding this is crucial to ConstructionSkills' sustainability as the principle body responding to and representing the sector, its firms, its workers and its learners.

8.2 Priorities

Reflecting on the evidence-base, key drivers and skills issues, and direction from the ConstructionSkills Strategic Partnership Panel, the following skills priorities and enabling activities have been agreed in consultation with industry and stakeholders. Industry Priorities represent longer term aspirations to increase the sector's productivity and competitiveness, and meet low carbon targets over the coming years. Enablers reflect the more immediate skills issues for the SSC, partner organisations and stakeholders to address.

Industry Priorities

- The Productivity Challenge – supporting employer and industry competitiveness through upskilling and improved levels of health, safety, competence and efficiency.

- The Low Carbon Challenge – providing clarity and support on skills needs in response to increasing demands on industry and potential new markets opening up.

Enablers

- The Leadership Challenge – providing leadership for the sector on key skills issues and quality standards, and addressing employers' leadership skills needs.

- The Recruitment Challenge – keeping the pipeline of talented new entrants flowing.

- The Employer Engagement Challenge – keeping in close contact with employers so that we understand their skills needs and shape solutions accordingly.

- The Education and Training Challenge – working with schools, colleges, universities and other providers to ensure we strengthen the skills infrastructure and deliver 'right skills, right place, right time'.

8.3 Skills Strategy and Solutions

SSC Core Remit

As a high performing Sector Skills Council (SSC) our responsibility remains to:

- Raise employer engagement, demand and investment in skills
- Provide authoritative labour market intelligence for our sector, and
- Develop national occupational standards and ensure qualifications meet employer needs.

These core SSC activities contribute towards a number of the industry priorities and enablers identified. Building on these we work across our partner organisations to deliver a range of sector specific solutions, supported by the additional resources we seek to secure.

Sector Skills Agreement

ConstructionSkills' UK-wide Sector Skills Agreement (SSA) is key to delivering our commitments as an SSC. Consultation with industry in agreeing the Industry Priorities and Enablers has been reflected in our updated SSA – this ensures that the activities we undertake, and those that we look to other stakeholders to deliver, address the most immediate skills priorities and training needs.

The Productivity Challenge – *supporting employer and industry competitiveness*
➢ Qualifying the workforce, upskilling existing workers to raise qualification levels and increase effectiveness ➢ Improving health, safety and welfare awareness and behaviours, and levels of competence on site ➢ Understanding and addressing employers' business skills needs, supporting short term survival and longer term prosperity
The Low Carbon Challenge – *supporting industry's future skills needs*
➢ Building knowledge on industry's future skills needs and translating this into practical solutions ➢ Working in partnership across the UK, Professional and Built Environment sectors on low carbon issues, to maximise influence over policy and funding for future skills
The Leadership Challenge – *providing industry leadership on skills and leadership training for employers*
➢ Working with employers and their representative bodies, professional bodies, trade unions, delivery partners, clients, other SSCs and related bodies to develop an integrated approach ➢ Leveraging our authoritative research data to influence Government policy on industry's behalf ➢ Understanding and addressing employers' management & leadership skills needs
The Recruitment Challenge – *keeping the pipeline of talent flowing*
➢ Promoting and delivering apprenticeships and pathways, influencing the construction-related curriculum for 14-19 year olds, and supporting undergraduates in partnership with stakeholders ➢ Providing information, advice and guidance on qualifications and careers to potential recruits and their influencers ➢ Actively promoting diversity and equal opportunities
The Employer Engagement Challenge – *recognising and responding to skills needs*
➢ Promoting the benefits of investing in training and development ➢ Diagnosing skills needs and providing or signposting solutions ➢ Extending our reach – particularly with SMEs, consultancies and trade bodies, and through working with employer groups
The Education and Training Challenge – *working with providers to deliver 'right skills, right place, right time'*
➢ Demonstrating and utilising an authoritative understanding of skills provision to influence funding decisions ➢ Working with providers across the learning lifecycle to ensure industry's current and future skills needs are met through the supply of sufficient, affordable and quality provision ➢ Developing accreditation schemes to give confidence to our employers about education and training provision

9. Appendix

9.1 Glossary of Acronyms

ABI	Annual Business Inquiry
AHP	Affordable Housing Programme
ALP	Average Labour Productivity
ASHE	Annual Survey of Hours and Earnings
BHPS	British Household Panel Survey
BIS	Department for Business, Innovation and Skills
BME	Black and Minority Ethnic
BRC	British Retail Consortium
BSF	Building Schools for the Future
CCS	Carbon Capture and Storage
CDM	Construction Design and Management
CEBE	Constructing Excellence in the Built Environment
CECA	Civil Engineering Contractors Association
CERT	Carbon Emissions Reduction Target
CESP	Community Energy Saving Programme
CIC	Construction Industry Council
CIL	Community Infrastructure Levy
CPA	Construction Products Association
CSCS	ConstructionSkills Competence Scheme
CSN	Construction Skills Network
CSR	Comprehensive Spending Review
DCLG	Department for Communities and Local Government
EEA	European Economic Area
EPBD	Energy Performance of Buildings Directive
EPC	Energy Performance Certificates
ERG	Efficiency and Reform Group
EU	European Union
FE	Further Education
FIT	Feed in Tariff
FMB	Federation of Master Builders
GDP	Gross Domestic Product
GVA	Gross Value Added
HCA	Homes and Communities Agency
HE	Higher Education
HEPI	Higher Education Policy Institute
HESA	Higher Education Statistics Agency
HESS	Heat and Energy Saving Strategy
HIP	Home Information Pack
HMRC	Her Majesty's Revenue and Customs
HNC	Higher National Certificate
HND	Higher National Diploma
HSE	Health and Safety Executive
HVAC	Heating, Ventilating, and Air Conditioning
ICT	Information and Communications Technology
IDBR	Inter Departmental Business Register
IGT	Innovation and Growth Team
JVC	Joint Venture Company
KPI	Key Performance Indicator
KTP	Knowledge Transfer Partnership
LCHO	Low Cost Home Ownership
LFS	Labour Force Survey
LOSC	Labour Only Sub Contractors
MAC	Migration Advisory Committee
MMC	Modern Method of Construction

NEC	Not Elsewhere Classified
NESS	National Employer Skills Survey for England
NHPAU	National Housing and Planning Advice Unit
NHTG	National Heritage Training Group
NI	National Indicator
NIESR	National Institute of Economic and Social Research
NIC	National Insurance contributions
NOS	National Occupational Standards
NSCC	National Specialist Contractors Council
NVQ	National Vocational Qualification
OFT	Office of Fair Trading
OGC	Office of Government Commerce
ONS	Office for National Statistics
PAYE	Pay As You Earn
PFI	Private Finance Initiative
PQQ	Pre-Qualification Questionnaire
R&M	Repair and Maintenance
RHI	Renewable Heat Incentive
SIC	Standard Industrial Classification
SME	Small and Medium-sized Enterprise
SOC	Standard Occupational Classification
SSC	Sector Skills Council
SVQ	Scottish Vocational Qualification
TFP	Total Factor Productivity
UKCES	UK Commission for Employment and Skills
UKCG	UK Contractors Group
USCG	United States Gulf Coast
VAT	Value Added Tax
VRQ	Vocationally Related Qualification
WAG	Welsh Assembly Government

9.2 Glossary of Terms

Term	Description
Average Labour Productivity (ALP)	Describes the economic output per labour hour.
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 Contractors	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.
Total Factor Productivity (TFP)	Describes the portion of output not explained by the amount of inputs used in production.

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

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 Analysis	**Architectural and Engineering Activities; Technical Testing and**
71.1	**Architectural and engineering activities and related technical consultancy**
71.11	Architectural activities
71.11/1	Architectural activities
71.11/2	Urban planning and landscape architectural activities
71.12	Engineering activities and related technical consultancy
71.12/1	Engineering design activities for industrial process and production
71.12/2	Engineering related scientific and technical consulting activities
71.12/9 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.**
74.90/1	Environmental consulting activities
74.90/2	Quantity surveying activities

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

9.5 Type of Work: Detailed Descriptions[145]

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**[146]
(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.

[145] Office for National Statistics, Construction Statistics Annual 2010
[146] 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[147]

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,

[147] 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 22 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 23 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 23 feature in almost every sector.

Table 22 – 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 23 – 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 Construction Industry Council, Impact of the Recession on Construction Professionals – A view from the front line.	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.

This primary research involved two elements:

- An initial qualitative phase, involving 30 teledepths with firms within the professional services sector.
- A quantitative survey of 301 professional services firms employing 5 or more staff across the UK undertaken in October 2009.

The survey included 13 interviews with employers in Wales. Please note low base size.

Name	**Date**
ConstructionSkills, Employer Panel: Employer Attitudes and Motivations to Learning and Training	Wave 10: October 2010

Aim/Objectives

The Employer Panel seeks to complement and enhance ConstructionSkills' existing research by providing an open and regular programme of employer consultation, allowing a reality check for anecdotal reports and enabling employer reactions to be gained on 'hot topics' of the moment. A particular aim was to enable a more comprehensive understanding of actual behavioural issues influencing the decision(s) to train, the route(s) taken and the method(s) used.

Methodology

Each wave of research comprises 30 Qualitative and 1,500 quantitative interviews (both phases conducted by telephone) with employers and the self-employed operating within the traditional building sector (SIC 45) and the Professional Services sector (SIC 74.20).

Within the overall sample 95 interviews were undertaken in Wales.

Name	**Date**
ConstructionSkills and Experian, Construction Skills Network, 2011-2015	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**
ConstructionSkills and Foras Áiseanna Saothair (FÁS). Workforce Mobility and Skills in the UK Construction Sector	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 nation/region is constituted of workers originating or living in other parts of the UK/ROI (or further afield), and general mobility and travel to work issues
- the nature of the mobile workforce/'imported' workforce in terms of their occupations and their competence/qualification levels
- the scale and extent of occupational mobility within the construction workforce to see how workers in construction occupations change or keep their occupations over time, and related to this the extent to which managers have received training specifically to enhance their managerial skills

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 3,877 workers across 312 sites in the UK/ROI

Within the overall sample face to face interviews with 293 construction workers across 21 sites in Wales were undertaken.

Name	Date
ConstructionSkills, Construction Apprentices Survey,	2007

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 Skills and Training in the Construction Industry, 2008.	2008

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 in Great Britain and covered 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 1,125 interviews were conducted via a quantitative telephone survey across Great Britain.

The sample included 59 interviews with employers in Wales.

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.

The sample included 86 interviews with employers in Wales.

Name	**Date**
ConstructionSkills Training and the Built Environment	2010

Aim/Objectives
This project undertaken annually aims to measure the number of people entering construction training across Great Britain. These include those coming through ConstructionSkills' own managing agency and those entering other formal certificated training at craft and technical level. The survey also aims to discover the total capacity for skilled manual trades training that is currently available

Methodology
Postal questionnaire sent to all training providers across Great Britain who provide formal certificated training at craft and technical level.

Name	**Date**
ConstructionSkills, Understanding Future Change in Construction	2010

Aim/Objectives
The aim of this research is to establish an evidence base for ConstructionSkills on future skills across the construction sector. This takes the form of a high level overview of where the construction industry is expected to be in the short term (1-3 years), medium-term (3-5 years) and long term (5-10 years), and the resulting generic skills and training needs. The evidence base is to be enlightened by current construction industry views, utilised to underpin future research requirements and inform strategic thinking.

Methodology
Multi-faceted approach was adopted, to gather data through a range of separate routes:
Phase 1 - Literature review
Phase 2 – Focus Groups across Great Britain - attended by representatives from nearly 70 stakeholder organisations including those within, as well as impacting upon, the construction sector
Phase 3 - In-depth qualitative telephone interviews - 10 in England, 10 in Scotland and 9 in Wales with key stakeholders in the construction sector

Name	**Date**
ConstructionSkills, Cut the Carbon. Research Study: preparing for a low carbon future	2010

Aim/Objectives
The research study aimed to capture the knowledge and views of a range of construction clients that regularly procure services from SME contractors. In the context of the carbon reduction agenda, its ultimate goal was to understand what clients want, now and in the future, and how able the construction SME is to deliver.

Methodology
The report expresses the views of 39 public sector organisations, 38 main contractors, 28 corporate end-users and 1,507 homeowners captured via a mix of online questionnaires and telephone interviews.

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