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UK COMMISSION FOR EMPLOYMENT AND SKILLS

Construction, Building Services Engineering and Planning: Sector Skills Assessment 2012

Evidence Report 65
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Intelligence › Investment › Impact

Sector Skills Assessment: Construction, Building Services Engineering and Planning

ConstructionSkills

Zoey Breuer

UK Commission for Employment and Skills

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Foreword

The UK Commission for Employment and Skills is a social partnership, led by Commissioners from large and small employers, trade unions and the voluntary sector. Our ambition is to transform the UK's approach to investing in the skills of people as an intrinsic part of securing jobs and growth. Our strategic objectives are to:

- Maximise the **impact** of employment and skills policies and employer behaviour to support jobs and growth and secure an internationally competitive skills base;
- Work with businesses to develop the best market solutions which leverage greater **investment** in skills;
- Provide outstanding labour market **intelligence** which helps businesses and people make the best choices for them.

The third objective, relating to intelligence, reflects an increasing outward focus to the UK Commission's research activities, as it seeks to facilitate a better informed labour market, in which decisions about careers and skills are based on sound and accessible evidence. Related, impartial research evidence is used to underpin compelling messages that promote a call to action to increase employers' investment in the skills of their people.

Intelligence is also integral to the two other strategic objectives. In seeking to lever greater investment in skills, the intelligence function serves to identify opportunities where our investments can bring the greatest leverage and economic return. The UK Commission's third strategic objective, to maximise the impact of policy and employer behaviour to achieve an internationally competitive skills base, is supported by the development of an evidence base on best practice: "what works?" in a policy context.

Our research programme provides a robust evidence base for our insights and actions, drawing on good practice and the most innovative thinking. The research programme is underpinned by a number of core principles including the importance of: ensuring '**relevance'** to our most pressing strategic priorities; '**salience'** and effectively translating and sharing the key insights we find; **international benchmarking** and drawing insights from good practice abroad; **high quality** analysis which is leading edge, robust and action orientated; being **responsive** to immediate needs as well as taking a longer term perspective. We also work closely with key partners to ensure a **co-ordinated** approach to research.

Sector Skills Assessments (SSAs) are key sources of authoritative and focused sectoral labour market intelligence (LMI), designed to inform the development of skills policy across the UK. They combine "top-down" analysis of official data with bottom-up intelligence to provide a consistent, comparable and rich understanding of the skills priorities within different sectors of the economy, across the four UK nations.

Sharing the findings of our research and engaging with our audience is important to further develop the evidence on which we base our work. Evidence Reports are our chief means of reporting our detailed analytical work. All of our outputs can be accessed on the UK Commission's website at www.ukces.org.uk

But these outputs are only the beginning of the process and we are engaged in other mechanisms to share our findings, debate the issues they raise and extend their reach and impact. These mechanisms include our *Changing Behaviour in Skills Investment* seminar series and the use of a range of online media to communicate key research results.

We hope you find this report useful and informative. If you would like to provide any feedback or comments, or have any queries please e-mail info@ukces.org.uk, quoting the report title or series number.

Lesley Giles

Deputy Director

UK Commission for Employment and Skills

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Executive Summary

Introduction

This is the first Sector Skills Assessment for the UK construction, building services engineering and planning (CBSE&P) sector. It is one of a suite of reports for the sector which together cover the UK and each of its countries (England, Northern Ireland, Scotland and Wales). This report offers a narrative of the main current and future skills needs of the CBSE&P sector.

Business and economic environment

In spite of the recession, the CBSE&P sector remains a key component of the UK economy not only in terms of economic contribution and employment, but also in terms of wider job creation and wealth generation. In 2008 in the UK the broad Construction sector Gross Value Added (GVA) was almost £81 billion, which accounted for just over six per cent of total UK GVA; making the sector the seventh largest out of 15 broad sectors. However, the sector accounts for nine per cent of the UK workforce (2.9 million workers) making it the third largest UK sector by employment. The sector is characterised a relatively low incidence of higher-level qualifications across the workforce and skills deficiencies and productivity levels that lag behind some areas of the economy.

This assessment suggests that the CBSE&P sector has performed well in the recent past, but also that it has enormous potential for growth as a result of growing demand for its products and services. The UK Construction sector almost doubled (increase of 91 per cent) in GVA from just over £42 billion in 1999 to approaching £81 billion in 2008. Historical data demonstrates that the sector is a critical component of the UK economy overall and within the separate home nations whilst forecast growth and identifiable opportunities for workforce development suggest that it has significant potential for wealth generation and employment creation in the future. The sector has a large number of dependencies resulting from a substantial supply chain, and it is essential in terms of underpinning and enabling growth in other sectors.

Additionally, whilst not discussed explicitly or at length in this assessment the CBSE&P sector makes a significant contribution to the health and social wellbeing of UK society. It is increasingly recognised that the nature of the built environment and the process of construction affects both the natural and social environment. Certainly this is implied in opportunities that exist in relation to job creation, training and skills acquisition underpinning greater social mobility, and the challenge to decarbonise the UKs building stock and the construction process itself.

The CBSE&P sector has undoubtedly suffered as a result of the recession. A combination of weak demand, rising costs and falling tender prices have made for difficult trading conditions throughout the sector and resulted in high levels of redundancy and business failure.

However, it might also be the case that long-standing ambitions to modernise the industry will result from being triggered by the recession. Certainly the structure of the industry is changing both in terms of its composition, operation and skill requirements.

Skill shortages

Whilst vacancy levels across the CBSE&P sector are comparable to other sectors it has an above average share of both Hard to Fill Vacancies (HtFVs) (40 per cent of vacancies as compared to 23 percent for the whole economy) and Skill-shortage Vacancies as a percentage of all vacancies (26 percent as compare to 16 per cent for the whole economy). This suggests there is a supply-side issue in terms of the availability of adequately skilled individuals in the available labour pool (i.e. those whose status is currently economically inactive) and / or those coming out of full-time education and training. In many respects this seems counter-intuitive in respect of the large number of individuals that have left the sector since the start of the recession, although the assumption is that most employers will have tried to retain their most skilled staff for as long as possible. This view is supported by the finding that the majority of CBSE&P employers report that HtFVs result from a lack of skills, experience or qualifications of those applying to work in the sector.

Significant opportunities also exist to improve the skills and competence of the existing workforce, to increase productivity, reduce reliance on lower skilled or migrant workers, and support the uptake of new technologies and methods. In addition to experiencing skill deficiencies within the external workforce, employers in the sector also encounter skills issues within their internal workforce, which are manifested as skills gaps.

Skill gaps

One in ten employers across the CBSE&P sector report that they employed staff whom they considered not fully proficient, amounting to four per cent of the workforce. Whilst this is lower than the UK average for the wider economy, sector employers reporting skill gaps described half of their employees (50 per cent) as lacking full proficiency in job-specific skills and gaps exist across all of the major occupational areas.

The most common causes of skill gaps according to employers across the CBSE&P sector is that staff have only partially completed their training (50 per cent) and that they are new to the role (43 per cent). These findings serve to demonstrate the extent to which informal routes of entry into the industry exist and points towards one of the most significant limiting factors upon productivity performance across the sector.

One immediate consequence of skills gaps is an increase in workload for other staff and increased operating costs. Clearly this affects sector productivity, but also has significant implications in the medium to long-term, particularly in respect of introducing new working practices. This is a specific concern within the CBSE&P sector as it is experiencing great change in its working practices, and the expectation is that it has a central role to play in the delivery of a low carbon economy. The UK was recently found to be in the top three countries in the world in terms of working toward zero carbon in the built environment (RICS, 2011). Further investment in skills will be required to improve or maintain this position, and deliver very challenging targets on carbon reduction.

Opportunities for growth

The available evidence suggests that there are direct and indirect links between innovation, performance and skills. The suggestion is that low carbon working (encompassing the design, construction and operation of buildings) will not only result in a more sustainable sector, but will also impact positively on productivity. It will also necessitate the acquisition of new skills.

The UK's prosperity and national growth is in large measure dependent on an efficient CBSE&P sector. At the same time, the UK's commitment to reducing carbon and other greenhouse gas emissions is now a matter of legal obligation. Under the Climate Change Act 2008, emissions are targeted to fall by 26 per cent by 2020 and by no less than 80 per cent to 2050. The built environment is one of the largest contributors to greenhouse emissions, and therefore the sector has a major role to play in addressing the challenge, through its changing systems and processes and the skills that support them.

For the CBSE&P sector to progress and positively contribute towards a more efficient low carbon economy a significant skills-led cultural change in the sector is required to drive it towards a long-sought industry target of integrated and inter-disciplinary working.

Indeed, there is a growing recognition that multi-skilled employees represent a significant benefit for businesses, enabling them to operate and interact across several sectors and activities. Whilst this has, in part, been driven by structural changes imposed by the recession, it is backed by a growing body of empirical evidence.

Skills priorities

New skills will be needed to meet the high specification and low energy requirements of future buildings and infrastructure. The introduction of collaborative Building Information Modelling and Management (BIM) and increased growth in offsite manufacturing are both set to play a pivotal role as the industry moves from recession to recovery.

Changes in skills needs are particularly relevant for management and professional occupations, with increasing demand for higher level skills. Greater skills will be required by managers needing to operate businesses profitably in a competitive environment, and make the best use of the skills of their current workforce, whilst professionals will have to learn how to account for carbon using principles normally the preserve of accountants and economists.

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, off-site manufacture of components will require increased need for CAD/CAM trained building technicians to work on off-site design and application in factory conditions.

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 also predicted.

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.

Although skills deficiencies do not appear to be significantly hampering growth in the sector at the moment, this position could change. If there was a stronger than expected recovery in macro-economic conditions this would lead to increased employment demand, which in turn would impact upon vacancies, wages and migration.

1 Introduction

1.1 Purpose of report

The aim of this report is to provide authoritative labour market intelligence (LMI) for the construction, building services engineering and planning (CBSE&P) sector to inform the strategic decision making of national governments in the development of employment and skills policy. It is one of 15 UK Sector Skills Assessment (SSA) reports produced by Sector Skills Councils[1] and the UK Commission for Employment and Skills.

SSAs combine top-down data from official sources with bottom-up sectoral intelligence to provide a consistent, comparable and rich understanding of the skills priorities within sectors across the four UK nations. The reports have been produced to a common specification (developed by the UK Commission in consultation with the four UK governments) and follow a consistent structure.

Reports have been produced for the following sectors of the economy:

- Agriculture, forestry and fishing
- Energy production and utilities
- Manufacturing
- Construction, building services engineering and planning
- Wholesale and retail trade
- Transportation and storage
- Hospitality, tourism and sport
- Information and communication technologies
- Creative media and entertainment
- Financial, insurance & other professional services
- Real estate and facilities management
- Government
- Education
- Health
- Care

[1] Please note, the Education report was produced by LSIS who are not a licensed Sector Skills Council

The reports contain intelligence on sectors and sub-sectors of particular interest to the four UK governments. As each nation has different 'key sectors', that are defined in different ways, it hasn't be possible define the SSA sectors in a way that matches precisely the key sectors identified by each nation government. Therefore, as far as possible, data has been reported in such a way that it can be aggregated to produce an overall picture for key sectors of interest. In some cases this will involve gathering information from more than one SSA report.

The reports are designed to provide sectoral intelligence at a relatively broad level for strategic decision making purposes. Whilst they do contain some sub-sectoral and occupational intelligence, further intelligence at a more granular level may be available from individual Sector Skills Councils.

In addition to the main UK reports, executive summaries have been produced for Scotland, Wales and Northern Ireland. The UK reports contain information on key regional variations between the four UK nations and within England where appropriate (for example if sectoral employment is focused in a particular geographic area). However, the reports are not designed to provide a comprehensive assessment of sectoral skills issues beyond the national level.

1.2 Defining the sector

Construction, building services engineering and planning (CBSE&P) as a discrete sector encompasses all business activities related to the planning, design, construction, operation, and maintenance of the built environment. In this respect CBSE&P represents a wide variety of business types and occupations, from construction contracting firms to professional consultancies, and their workforces of skilled 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.

The CBSE&P footprint is built on the grouping of four 2-digit SIC codes:

- 41 Construction of buildings
- 42 Civil engineering
- 43 Specialised construction activities
- 71 Architectural and engineering activities; technical testing and analysis.

To meet consistency requirements, analysis of national datasets are undertaken at a 2-digit SIC code level (or by combining 2-digit SIC codes where appropriate).

The CBSE&P sector is fairly well served in respect of SIC codes reflecting sectoral activity and in terms of the robustness of the data at the 2-digit level.

With the exception is data on total employment and employment trends sub-sectoral data from national datasets at a 4-digit SIC code level is not reported here, but where possible this assessment reflects sub-sectoral differences and issues. Sub-sectoral analysis where present utilises 4-digit SIC code definitions, details of which can be found in Appendix B.

It should be noted that throughout this report the information collected and analysed from SSC commissioned research does not always conform to the SIC definition of the sector. The reasons for this vary, but largely results from the research being commissioned by the separate contributing SSCs and because the terminology that employers recognise and use is not always consistent with SIC definitions. Every effort has been made to include alternative meaningful analysis although the constraints and limitations of such analysis are clearly noted.

In addition to SIC codes the sector is as much defined by the main occupations that work within it. These hold a significant degree of currency with employers and also reflect the strong federation presence within the sector. As a result occupational definitions are also often viewed by employers and sector stakeholders as sub-sectors in their own right. This is particularly true of activities within specialist contracting sector and professional services sector, and is reflected in employer-based research commissioned by SSCs. However, every effort has been made to minimise the use of such definitions in reference to sub-sectors and provide a clear explanation of why such terminology is employed.

1.3 Sector Skills Councils

Sector Skills Councils (SSCs) provide employers with a unique forum to express the skills and productivity needs pertinent to their sector. Each SSC is an employer-led, independent organisation, covering a specific sector across the UK.

While each SSC is responsible for a specific sector or footprint (as defined by SIC codes specified within their contract), many have cross sector interests and share common strategic objectives. This is particularly evident across the built environment, and is reflected in the composition of the construction, building services engineering and planning (CBSE&P) sector.

Four SSCs have an immediate interest in the CBSE&P sector, or parts thereof in terms of SIC coverage set out in their respective licenses. Each has contributed to the production of this assessment, or been consulted in its production. The relevant SSCs are:

- ConstructionSkills the SSC for construction. As a partnership between CITB-ConstructionSkills, the Construction Industry Council and CITB-Northern Ireland, it covers the construction industry from crafts through to building professionals.
- SummitSkills the SSC for the building services engineering sector, covering electro-technical, heating, ventilation, air-conditioning, refrigeration and plumbing.
- Asset Skills the SSC for the management and maintenance of the built environment, which encompasses property, housing, facilities management and cleaning.
- Semta the SSC for the science, engineering and manufacturing industries.

In addition to the contribution made to this assessment details of the research commissioned by each individual SSC can be accessed via their respective websites:

ConstructionSkills http://www.cskills.org/sectorskills/researchfromssc/index.aspx

SummitSkills http://www.summitskills.org.uk/research/181

Asset Skills http://www.assetskills.org/Research/Research.aspx

Semta http://www.semta.org.uk/about_us/media_centre/labour_market_information.aspx

1.4 Summary of methodology

This report combines top-down data with bottom-up intelligence to provide a rich assessment of sectoral skills priorities that is consistent and comparable with assessments produced for other sectors of the economy.

Three main types of information have been drawn on in the preparation of this report:

- Economy-wide quantitative data from core labour market information sources (such as the Labour Force Survey and the UK Commission's Employer Skills Survey).
- Sectoral, sub-sectoral and occupational specific quantitative data generated by SSCs / sector bodies and others (including Government departments and agencies, academics and professional associations).
- Qualitative information collected by SSCs / sector bodies and other organisations.

To ensure consistency and comparability across all 15 SSA reports, data from core labour market information sources was centrally collected, processed and formatted. It was then distributed by the UK Commission to Sector Skills Councils / sector bodies for inclusion within the reports. This data was quality assured by contractors, the UK Commission and by Sector Skills Councils.

To meet consistency requirements, sub-sector analysis of data from core sources has primarily been undertaken at a 2-digit Standard Industrial Classification (SIC) code level (or by combining 2-digit SIC codes where appropriate).

Data from core sources has been supplemented within the report with data from sector specific sources.

Sector Skills Councils commission primary research, in areas where gaps in knowledge or sectoral coverage have been identified and where current information is lacking detail and / or scarce. Nationally available data whilst allowing comparability between sectors, particularly at the 2-digit and 3-digit SIC level, is much less robust in its coverage at a sub-sectoral level and can lack currency in terms of reflecting recent changes to occupations and activities. In this respect SSC research is designed to supplement and expand on the existing evidence-base and information that might be gleaned from secondary sources.

The report also draws on qualitative research that has been undertaken to explore sectoral skills issues in more detail. Qualitative research with small samples of employers (and others); most commonly through interviews and focus groups, seeks to provide rich and detailed understanding and insight, rather than measurement. Samples tend to be designed to be broadly representative of the wider population, to gather a range of views. In terms of skills research with employers, size and sector tend to be key drivers of demand and therefore these are usually the main characteristics that are taken into account when designing samples.

The report synthesises and contextualises information from the sources identified above and, by undertaking a rigorous analysis of it, turns the information into intelligence.

Further information

Further methodological information is provided within Annex A. This includes descriptions of the main quantitative and qualitative sources used within the report.

2 Current performance of sector

Chapter Summary

- In 2008 in the UK the broad Construction sector Gross Value Added (GVA) was almost £81 billion, which accounted for just over six per cent of total UK GVA. This level of contribution at UK level means in terms of GVA the Construction sector was the seventh largest of the 15 broad sectors.
- An economic study conducted by L.E.K. Consulting suggested that in 2009 the Construction sector contributed £109 billion (directly c. 7.8 per cent, rising to c. 13 per cent overall when the entire value chain is considered) to UK GDP. The study suggested that £1 spent on construction output generates a total of £2.84 in total economic activity (i.e. GDP increase).
- The UK Construction sector almost doubled (increase of 91 per cent) in GVA from just over £42 billion in 1999 to approaching £81 billion in 2008 (in current price terms).
- There is general agreement that productivity in the CBSE&P sector lags behind some other areas of the economy and compares poorly with other countries, particularly the United States.
- In 2010 in the UK CBSE&P sector there were just over 358,000 establishments which accounted for 14 per cent of all establishments across all sectors in the economy.
- In 2010 in the UK just under 95 per cent of establishments in the sector had less than 25 employees, which was the highest proportion of any sector except for the Agriculture, forestry and fishing sector.
- In 2009 the CBSE&P sector had the second highest number of business enterprise start-ups at around 36,000 which accounted for 15 per cent of all economy business enterprise start-ups. The sector had, however, the highest number of enterprise business closures with just over 51,000 which accounted for 18 per cent of all business enterprise closures. It should be noted that 2009 was not a typical year because of the impact of the recession.

- In 2010 UK residents provided construction services with value of £1.22 billion outside the UK, although non-UK residents provided construction services with an almost identical value of £1.23 billion to the UK hence the balance of payments was -£11 million (i.e. more services were imported than exported).
- According to a 2011 report published by Oxford Economics and Global Construction Perspectives the global Construction market is forecast to grow to £7.5 trillion by 2020, up by £3 trillion from £4.5 billion in 2010. By 2020 construction output is forecast to account for about 13 per cent of the world's GDP - with some of the larger emerging markets such as China, India, Russia, Brazil and Poland driving growth, along with the US.
- Almost 2.7 million people were employed in the CBSE&P sector in 2010. The sector accounted for nine per cent of total UK employment and was the fourth largest UK sector (of 15) in terms of employment.

2.1 Economic performance

2.1.1 The current and recent economic performance and competitive position of the sector

Gross Value Added[2] (GVA) represents the amount that individual businesses, industries or sectors contribute to the economy. Broadly, this is measured by the income generated by the business, industry or sector less their immediate consumption of goods and services used up to produce their output.

Table 2.1 shows 2008 GVA in current basic prices both values and proportions by broad sector for the UK and by devolved nation. In 2008 in the UK the broad Construction sector GVA value was almost £81 billion, which accounted for just over six per cent of all sectors GVA. This level of contribution at UK level means in terms of GVA the Construction sector was the seventh largest of the 15 broad sectors.

[2] Gross Value Added is the difference between the value of the output produced by a sector or region and its intermediate consumption. Intermediate consumption is the cost of raw materials and other inputs that are used up in the production process. (2010) *The National Strategic Skills Audit for England*. Volume 2: The Evidence Report, UK Commission.

Table 2.1: GVA by nation (2008) (£m in current basic prices)

	UK	England	Scotland	Wales	Northern Ireland	UK	England	Scotland	Wales	Northern Ireland
	£m	£m	£m	£m	£m	%	%	%	%	%
Agriculture, hunting, forestry & fishing	9,715	7,982	1,180	145	407	0.8%	0.7%	1.1%	0.3%	1.4%
Mining and quarrying of energy producing materials	2,661	1,298	1,277	60	27	0.2%	0.1%	1.2%	0.1%	0.1%
Other mining and quarrying	2,365	1,777	282	134	173	0.2%	0.2%	0.3%	0.3%	0.6%
Manufacturing	150,298	124,860	13,555	7,734	4,149	11.9%	11.5%	13.1%	17.0%	14.4%
Electricity, gas and water supply	21,342	17,414	2,653	729	545	1.7%	1.6%	2.6%	1.6%	1.9%
Construction	80,756	68,247	7,328	2,924	2,256	6.4%	6.3%	7.1%	6.4%	7.8%
Wholesale and retail trade (including motor trade)	147,158	127,900	10,441	5,166	3,651	11.7%	11.8%	10.1%	11.4%	12.7%
Hotels and restaurants	36,428	30,938	3,297	1,424	770	2.9%	2.9%	3.2%	3.1%	2.7%
Transport, storage and communication	91,347	80,262	7,065	2,529	1,491	7.2%	7.4%	6.8%	5.6%	5.2%
Financial intermediation	116,801	104,574	8,501	2,305	1,422	9.3%	9.7%	8.2%	5.1%	4.9%
Real estate, renting and business activities	303,179	268,770	20,829	8,380	5,200	24.0%	24.8%	20.1%	18.4%	18.0%
Public administration and defence	63,281	51,275	6,148	3,275	2,583	5.0%	4.7%	5.9%	7.2%	9.0%
Education	76,493	64,478	6,322	3,502	2,191	6.1%	6.0%	6.1%	7.7%	7.6%
Health and social work	93,775	76,336	9,851	4,788	2,800	7.4%	7.0%	9.5%	10.5%	9.7%
Other services	65,563	57,177	4,804	2,420	1,162	5.2%	5.3%	4.6%	5.3%	4.0%
All sectors	1,261,162	1,083,288	103,533	45,515	28,827	100.0%	100.0%	100.0%	100.0%	100.0%

Note(s): Data is not organised by SSA sectors. This is because data is not available at a 2-digit (division) level. Therefore, the list of sectors presented in the table are those used in Regional Accounts.
Source: Regional Accounts, Office National Statistics, 2010.

There is slight variation in the proportion of all sectors GVA that Construction accounted for across the nations – ranging from just over six per cent in England and Wales to just over seven per cent in Scotland and almost eight per cent in Northern Ireland. In terms of contribution to all sectors GVA Construction was the sixth largest sector in Scotland and Northern Ireland and seventh largest in England and Wales.

A study[3] conducted by L.E.K. Consulting suggested that in 2009 the Construction sector contributed £109 billion (directly c. 7.8 per cent, rising to c. 13 per cent overall when the entire value chain is considered) to UK GDP. The study noted that Construction has been a significant contributor to historical UK output growth and the Construction industry is a driver of growth in other sectors due to its heavy reliance on an extended and varied supply chain. The study suggested that £1 spent on construction output generated a total of £2.84 in total economic activity (i.e. GDP increase). In addition to the economic benefits, every £1 invested in construction provides financial returns to the treasury in tax income and benefit saving.

Table 2.2 shows 2008 GVA in current basic prices by English region. The proportion of all sectors GVA that Construction accounted for varied by region from just over four per cent in London to between six per cent and seven per cent in all other regions. An explanation for the lower relative proportion that Construction accounts for in London is the high level of contribution from Real estate, renting and business activities, Financial intermediation and Other services sectors in this region.

[3] L.E.K. consulting for UKCG (2009) Construction in the UK economy – the benefits of investment available at: http://www.ukcg.org.uk/fileadmin/documents/UKCG/pamphlets/UKCGfina.pdf, [Accessed 21st November 2011]. The report is based on economic analysis of national datasets, outline details of the calculation used to calculate the £2.84 figure are provided on p.10 of the report. The report has been widely published and cited in the industry.

Table 2.2: GVA by English region (2008) (£m in current basic prices)

	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West
	£m	£m	£m	£m	£m	£m	£m	£m	£m
Agriculture, hunting, forestry & fishing	303	777	966	996	915	1,387	86	1,168	1,383
Mining and quarrying of energy producing materials	81	90	140	130	82	164	280	270	61
Other mining and quarrying	178	142	156	379	84	132	60	202	442
Manufacturing	6,706	19,336	14,332	13,299	13,974	13,518	13,651	18,084	11,961
Electricity, gas and water supply	979	1,622	1,511	1,952	1,920	1,948	1,823	3,061	2,598
Construction	2,990	8,236	6,266	5,835	6,588	8,946	10,262	12,482	6,643
Wholesale and retail trade (including motor trade)	4,424	14,906	11,348	10,850	12,313	15,933	22,016	24,588	11,522
Hotels and restaurants	1,123	3,527	2,383	2,012	2,905	3,041	7,717	5,063	3,166
Transport, storage and communication	2,668	8,846	6,518	5,866	6,596	9,871	17,509	16,218	6,170
Financial intermediation	2,195	8,356	6,641	3,702	5,260	9,352	48,190	13,828	7,050
Real estate, renting and business activities	7,842	26,072	17,146	16,325	20,405	29,769	74,039	55,440	21,733
Public administration and defence	2,623	5,843	4,753	3,919	4,376	5,634	7,642	10,218	6,267
Education	3,156	8,008	6,302	4,877	6,541	6,725	11,972	10,861	6,036
Health and social work	4,004	10,080	7,552	5,894	7,215	8,201	13,719	11,975	7,696
Other services	1,715	5,174	3,459	3,314	4,583	5,577	18,190	10,551	4,615
All sectors	40,987	121,015	89,473	79,350	93,757	120,198	247,156	194,009	97,343

Note(s): Data is not organised by SSA sectors. This is because data is not available at a 2-digit (division) level. Therefore, the list of sectors presented in the table are those used in Regional Accounts.
Source: Regional Accounts, Office National Statistics, 2010.

In line with the data above, in terms of contribution to all sectors GVA the Construction sector was between the sixth and ninth largest sector across the regions.

Table 2.3 shows UK GVA by broad sector in current basic prices from 1999 to 2008. The UK Construction sector has almost doubled (increase of 91 per cent) in GVA from just over £42 billion in 1999 to almost £81 billion in 2008. The value of GVA across all sectors over the period increased by just over half (increase of 56 per cent) from over £808 billion in 1999 to just over £1,261 billion in 2008. The proportion of all sectors GVA that Construction accounted for increased from just over five per cent in 1999 to just over six per cent in 2008. In line with this data, Construction was the eighth largest sector in 1999 and the seventh largest sector in 2008.

Table 2.3: UK GVA (1999-2008) (£m in current basic prices)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	£m	£m	£m	£m	£m	£m	£m	£m	£m	£m
Agriculture, hunting, forestry & fishing	9,022	8,532	8,333	9,007	9,807	10,670	7,530	7,792	8,632	9,715
Mining and quarrying of energy producing materials	2,059	1,998	1,874	1,661	1,456	1,643	2,055	2,297	1,861	2,661
Other mining and quarrying	1,700	1,784	1,750	1,469	1,519	1,848	2,115	2,145	2,291	2,365
Manufacturing	151,157	150,009	149,223	146,308	144,845	145,689	148,110	151,455	154,726	150,298
Electricity, gas and water supply	15,703	15,798	15,660	16,052	16,405	16,106	16,685	20,279	21,884	21,342
Construction	42,236	45,626	50,526	54,684	59,522	66,029	69,868	74,619	80,675	80,756
Wholesale and retail trade (including motor trade)	99,509	103,410	110,249	113,777	120,520	127,367	129,810	135,366	141,735	147,158
Hotels and restaurants	24,146	25,605	26,928	28,639	30,120	31,870	32,902	34,594	35,962	36,428
Transport, storage and communication	64,961	69,201	70,502	73,064	76,587	79,020	80,889	83,655	88,280	91,347
Financial intermediation	48,545	44,989	48,202	63,367	71,530	75,117	79,553	90,807	103,731	116,801
Real estate, renting and business activities	173,329	188,361	204,041	214,849	232,204	248,677	260,116	276,108	296,955	303,179
Public administration and defence	39,891	41,645	43,855	46,212	49,768	53,779	58,229	60,385	61,503	63,281
Education	44,914	48,111	51,675	55,099	58,328	61,934	65,739	68,926	72,766	76,493
Health and social work	51,577	55,282	59,549	64,492	70,593	75,154	79,965	85,965	89,381	93,775
Other services	39,821	42,085	44,560	48,311	51,804	54,947	57,961	60,166	62,824	65,563
All sectors	808,570	842,436	886,927	936,991	995,008	1,049,850	1,091,527	1,154,559	1,223,206	1,261,162

Note(s): Data is not organised by SSA sectors. This is because data is not available at a 2-digit (division) level. Therefore, the list of sectors presented in the table are those used in Regional Accounts.
Source: Regional Accounts, Office National Statistics, 2010.

Table 2.4 shows the GVA per employee job by sector and nation in 2009. In 2009 the CBSE&P sector value of £65,000 per employee job exceeded that of the average for the economy of £46,000. The sector is ranked fifth out of 15 sectors on this measure. This pattern was similar across the devolved nations where the sector had the same ranking in England, Wales and Northern Ireland, falling to sixth in Scotland.

It should be noted, however, that these estimates overstate productivity in the sector to some exten0074, since the denominator for the productivity ratio is employee jobs and there is a significant number of self-employed workers in the construction sector.

Table 2.4: Estimated workplace gross value added per employee job at current basic prices, 2009

SSA Sector	UK	England	Wales	Scotland	Northern Ireland
	£000s	£000s	£000s	£000s	£000s
Agriculture, forestry and fishing	35	41	11	21	25
Energy production and utilities	131	134	118	127	107
Manufacturing	52	51	49	61	53
Construction, building services engineering and planning	**65**	**66**	**54**	**60**	**56**
Wholesale and retail trade	33	33	27	29	27
Transportation and storage	50	51	44	50	41
Hospitality, tourism and sport	23	23	21	22	20
Information and communication technologies	83	84	72	77	63
Creative media and entertainment	45	49	30	12	38
Financial, insurance & other professional services	86	89	57	69	63
Real estate and facilities management	85	86	103	67	98
Government services	39	40	33	35	40
Education	33	33	32	36	33
Health	27	27	26	25	23
Care	30	30	28	31	26
Not within scope	32	33	27	35	30
All sectors	46	47	38	43	38

Source: UK Commission estimates based on Regional Accounts; Annual Business Survey; Business Register and Employment Survey (BRES). See technical appendix for basis for estimates.
Notes: Figures for Real estate and facilities management sector include contribution from owner-occupier imputed rental. All figures exclude Extra-Regio element. Estimates will tend to overstate the level of GVA per job in those sectors with high levels of self-employment.

The CBSE&P sector remains a relatively labour-intensive sector and this explains why the GVA per person employed figure is lower than other less labour-intensive sectors such as energy production and utilities.

The *Working Futures* model (Wilson and Homenidou, 2011) provides historic estimates of productivity (output per job) by sector on a constant price (chained volume measure) basis. This analysis indicates an average rate of productivity growth for the UK construction sector for the first half of the last decade (2000-2005) of 0.6 per cent per annum. This is much lower than the average rate for the wider UK economy of 1.4 per cent. According to *Working Futures* the relatively slow rate of growth in construction productivity can be linked to the sustained growth in employment levels in the sector over the period in question.

Arguments about the completeness of macro indicators aside the consensus that the greatest 'drain' on productivity in construction relates to poor planning, which prevents the efficient use of the workforce and creates re-work due to preventable errors. There has been over the last decade a major drive to fix the problems by changing the way the industry operates. This has had, and will have, implications for the managers in larger companies

who have to adapt their skills set to deal with greater risk, wider involvement in the whole construction cycle and a partnering culture.

In 2011 ConstructionSkills commissioned a study[4] into Productivity in the Construction Sector which comprised of 150 telephone interviews with construction managers and supervisors across a range of companies working within the construction sector. Its aim was to understand what productivity means to the industry through a series of depth and extended telephone interviews across five categories of firm: civil engineering, house builders, general building, specialist trades and repair and maintenance (R&M). Overall the research found that there is not one clearly established definition of productivity, the term has various meanings and is interpreted differently by different respondents. Comparison is almost always in terms of what the individual company has done before, with no reference to any industry standard.

Respondents were asked spontaneously how they define productivity; the research found the most common response (34 per cent) was productivity tends to be defined against targets, estimates or programmes of work. Just over one in ten (11 per cent) equate productivity with profitability, with smaller numbers defining it in terms of units produced (seven per cent), man hours per task or unit (seven per cent) or as turnover (six per cent).

When prompted with definitions of productivity and asked which most closely matched their definition (respondents could select more than one definition) respondents tended to select several definitions. The largest single answer was to define productivity in terms of man hours per task/unit (61 per cent). Around half (50 per cent) define it as the total project cost divided by the number of man hours needed to complete that project and number of units produced in a certain time period (47 per cent), with around two fifths each mentioning resources taken to produce a unit of production (41 per cent) or value of output per person per hour (39 per cent).

2.1.2 Employer profile (number of employers, size, start-ups and closures)

Table 2.5 shows the number of establishments by sector and UK nation in 2010. In 2010 in the UK CBSE&P sector there were just over 358,000 establishments which accounted for 14 per cent of all establishments across all sectors in the economy. This proportion is the same or within one percentage point of the level in each of the UK nations. In terms of the total number of establishments the CBSE&P sector had the second highest number across sectors and was second only to Wholesale and retail trade sector.

[4] ConstructionSkills (2011) *Productivity in the Construction Sector. Not published yet.*

Table 2.5: Number of establishments by sector and nation (2010)

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	144,895	6%	96,770	4%	17,625	9%	14,210	13%	16,290	19%
Energy production and utilities	13,290	1%	10,365	0%	1,495	1%	865	1%	565	1%
Manufacturing	144,115	6%	124,235	6%	9,395	5%	6,040	5%	4,445	5%
Construction, building services engineering and planning	358,455	14%	303,300	14%	27,845	14%	14,280	13%	13,030	15%
Wholesale and retail trade	509,215	20%	431,330	20%	38,165	20%	23,000	20%	16,720	20%
Transportation and storage	83,825	3%	70,685	3%	6,370	3%	3,925	3%	2,845	3%
Hospitality, tourism and sport	223,370	9%	185,390	8%	20,515	11%	11,580	10%	5,885	7%
Information and communication technologies	131,065	5%	120,095	5%	6,610	3%	3,130	3%	1,230	1%
Creative media and entertainment	134,115	5%	121,900	6%	6,830	4%	3,640	3%	1,745	2%
Financial, insurance & other professional services	255,000	10%	228,725	10%	14,770	8%	7,160	6%	4,345	5%
Real estate and facilities management	149,325	6%	129,340	6%	10,610	5%	5,730	5%	3,645	4%
Government services	52,210	2%	40,870	2%	5,625	3%	2,985	3%	2,730	3%
Education	67,125	3%	55,020	3%	5,535	3%	3,250	3%	3,320	4%
Health	55,135	2%	46,925	2%	3,895	2%	2,515	2%	1,800	2%
Care	85,935	3%	70,460	3%	7,810	4%	4,710	4%	2,955	4%
All economy	2,574,230	100%	2,183,845	100%	193,305	100%	112,810	100%	84,270	100%

Source: Inter-departmental Business Register (IDBR), Office National Statistics

It is important to note that although there are a large number of establishments most will employ only a small number of employees as Table 2.11 discussed later shows. The CBSE&P sector is characterised by a small number of large firms and a very long tail of small firms.

Table 2.6 shows the number of establishments by sector and English region in 2010. The CBSE&P sector accounted for typically between 14 per cent and 16 per cent of all establishments across the UK economy for each of the English regions with the exception of London where the sector accounted for just 11 per cent of all establishments. In London there were relatively high numbers of Creative media and entertainment, Financial, insurance & other professional services and Real estate and facilities management establishments which may partly explain why the CBSE&P sector accounted for a relatively lower proportion of establishments compared to other regions.

Table 2.6: Number of establishments by sector and English region (2010)

	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West
Agriculture, forestry and fishing	3,870	11,305	11,205	10,770	11,880	12,170	935	11,785	22,850
Energy production and utilities	475	1,460	1,155	1,025	1,065	1,320	950	1,605	1,310
Manufacturing	4,650	15,950	13,100	12,915	15,930	15,235	13,350	20,025	13,080
Construction, building services engineering and planning	10,845	35,520	26,035	24,975	28,750	41,485	42,520	58,785	34,385
Wholesale and retail trade	16,630	55,955	41,975	36,895	45,695	48,635	67,620	71,850	46,075
Transportation and storage	2,610	8,775	7,270	6,830	7,930	9,305	9,190	11,570	7,205
Hospitality, tourism and sport	8,395	23,095	17,600	14,030	16,700	19,290	32,470	31,885	21,925
Information and communication technologies	2,325	10,885	6,685	6,900	9,260	14,735	29,655	28,805	10,845
Creative media and entertainment	2,660	10,035	6,735	6,215	7,425	12,210	43,255	22,760	10,605
Financial, insurance & other professional services	5,440	23,475	14,900	14,950	18,300	23,850	61,915	45,495	20,400
Real estate and facilities management	4,185	14,800	10,225	9,390	11,925	15,045	27,475	22,980	13,315
Government services	1,815	4,810	4,260	4,270	4,040	4,215	6,495	6,340	4,625
Education	2,495	6,890	4,965	4,810	5,465	6,330	8,215	9,925	5,925
Health	2,010	6,255	4,265	3,830	4,570	4,850	8,045	8,280	4,820
Care	3,575	9,340	6,950	6,110	6,940	7,210	10,725	11,700	7,910
All economy	75,975	255,705	187,810	174,700	210,065	253,120	392,540	394,505	239,425

Source: Inter-departmental Business Register (IDBR), Office National Statistics

Table 2.7 shows the number of establishments by sector in the UK from 2006-2010. Across the whole economy the total number of establishments increased by a very small proportion (two per cent) over the period. The number of establishments in the CBSE&P sector increased by over half (55 per cent) over the same period. This strong level of growth was the fourth highest across all sectors ranking after Education (132 per cent), Care (114 per cent) and Health (113 per cent) over the same period. In 2006 the sector accounted for just over nine per cent of all establishments and in 2010 almost 14 per cent of all establishments.

Table 2.7: Number of establishments by sector (UK) (2006-2010)

	2006	2007	2008	2009	2010	% Change 2006-2010
Agriculture, forestry and fishing	146,485	158,080	163,715	146,620	144,895	-1%
Energy production and utilities	18,170	18,260	11,435	12,980	13,290	-27%
Manufacturing	165,675	163,525	167,335	151,165	144,115	-13%
Construction, building services engineering and planning	230,610	240,535	258,055	374,320	358,455	55%
Wholesale and retail trade	533,105	532,905	532,060	520,070	509,215	-4%
Transportation and storage	70,425	70,750	71,665	86,680	83,825	19%
Hospitality, tourism and sport	219,770	222,920	227,430	229,690	223,370	2%
Information and communication technologies	136,395	140,505	144,080	134,805	131,065	-4%
Creative media and entertainment	125,100	130,185	131,180	132,225	134,115	7%
Financial, insurance & other professional services	271,310	283,920	287,015	256,915	255,000	-6%
Real estate and facilities management	180,305	191,195	201,915	155,855	149,325	-17%
Government services	159,395	164,690	54,875	52,060	52,210	-67%
Education	28,935	28,880	66,055	66,725	67,125	132%
Health	25,860	25,810	53,300	53,900	55,135	113%
Care	40,150	40,075	82,755	83,675	85,935	114%
All economy	2,533,855	2,600,065	2,643,215	2,634,790	2,574,230	2%

Note: Data for 2006-2008 is based on SIC 2003 whereas data beyond this uses SIC 2007. Some of the data for 2006-2008 is based on estimates.
Source: Inter-departmental Business Register (IDBR), Office National Statistics.

In terms of total numbers of establishments the CBSE&P sector had the third highest number of all sectors in 2006 and the second highest number in 2010. The change in relative rank may be explained by the number of establishments in Financial, insurance & other professional services sector which decreased slightly over the period (six per cent) to fewer than the CBSE&P sector in 2009 and 2010.

Table 2.8 shows the number of establishments for the whole economy by number of employees. Most establishments in the UK are small with approaching nine in ten (89 per cent) with less than 25 employees. The picture is similar across the home nations.

Table 2.8: Number of establishments by number employee's whole economy (UK) (2010)

	UK	England	Scotland	Wales	Northern Ireland	%UK	%England	%Scotland	%Wales	%Northern Ireland
2-4	908,825	767,415	66,560	44,675	30,175	52	52	48	54	52
5-9	388,990	323,815	33,775	18,005	13,395	22	22	24	22	23
10-24	259,470	215,295	23,090	11,910	9,175	15	15	17	14	16
25-49	97,820	82,055	8,330	4,170	3,265	6	6	6	5	6
50-99	49,505	41,835	4,140	2,055	1,475	3	3	3	2	3
100-199	21,905	18,505	1,905	925	570	1	1	1	1	1
200-250	4,135	3,525	360	150	100	0	0	0	0	0
251-499	7,605	6,440	655	330	180	0	0	0	0	0
500+	4,115	3,475	375	175	90	0	0	0	0	0
Total	1,742,370	1,462,360	139,190	82,395	58,425	100	100	100	100	100

Source: Inter-departmental Business Register (IDBR), Office National Statistics.

Table 2.9 shows the proportions of establishments by number of employees by sector. In 2010 the CBSE&P sector had just over 211,000 establishments with more than one employee which accounted for just over one in ten (12 per cent) of the total number of establishments with more than one employee across the whole economy.

Table 2.9: Number of establishments by number employees by sector (UK) (2010)

	Number of employees						
	2-4	5-9	10-24	25-49	50-250	251+	All
	%	%	%	%	%	%	Number
Agriculture, forestry and fishing	80	14	5	1	0	0	97,910
Energy production and utilities	36	22	20	10	10	2	10,265
Manufacturing	43	22	18	8	8	1	108,050
Construction, building services, engineering and planning	67	18	10	3	2	0	211,710
Wholesale and retail trade	49	27	16	4	3	1	385,760
Transportation and storage	48	20	16	7	8	1	52,620
Hospitality, tourism and sport	42	30	19	6	3	0	198,630
Information and communication technologies	68	15	10	4	3	1	56,710
Creative media and entertainment	66	17	10	4	3	0	62,305
Financial, insurance & other professional services	57	21	14	4	3	1	134,900
Real estate and facilities management	62	21	11	3	3	1	95,270
Government services	34	21	20	10	12	4	41,505
Education	20	14	20	23	21	2	56,740
Health	31	24	25	10	7	2	47,570
Care	26	24	28	13	8	0	75,725
All economy	52	22	15	6	4	1	1,742,370

Source: Inter-departmental Business Register (IDBR), Office National Statistics.

The CBSE&P sector contains a high proportion of establishments that employ small numbers of employees. In 2010 at UK level just under 95 per cent of establishments in the sector had less than 25 employees, which was the highest proportion of any sector except for Agriculture, forestry and fishing which had 99 per cent with less than 25 employees. Exactly five per cent of establishments in the sector employed between 25 and 250 employees, the smallest proportion of all sectors with the exception of Agriculture, forestry and fishing which had one per cent with between 25 and 250 employees. As might be expected the sector had a very low proportion of establishments with more than 250 employees, 0.2 per cent of establishments were of this size, the lowest proportion of all sectors with the exception of Agriculture, forestry and fishing which had 0.03 per cent with this number of employees.

It is important to note that although the sector is characterised by a large number of small firms employing less than 25 employees (95 per cent) the large firms that do exist within the sector carry out a disproportionate share of the work by value. In addition a large proportion (36 per cent) of the sector workforce is self-employed.

Table 2.10 shows the number and proportion of establishments by employee size band by nation for the CBSE&P sector in 2010. The distribution by size band is fairly similar (within six percentage points) across the home nations. Scotland contains a slightly lower proportion of very small establishments, 61 per cent have two to four employees compared to 67 per cent for UK. The difference may be explained by the slightly higher proportion of larger establishments - those with ten to 250 employees which accounted for 19 per cent of establishments in Scotland compared to 15 per cent of those across UK.

Table 2.10: Number of establishments by number employees within CBSE&P sector by nation (2010)

	England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%
2-4	121,140	68	10,105	61	6,120	66	5,415	65
5-9	30,910	17	3,230	19	1,785	19	1,695	20
10-24	16,395	9	2,020	12	905	10	880	10
25-49	5,055	3	695	4	255	3	270	3
50-250	3,570	2	525	3	185	2	120	1
251+	345	0	65	0	20	0	5	0
Total	177,415	100	16,640	100	9,270	100	8,385	100

Source: Inter-departmental Business Register (IDBR), Office National Statistics.

Table 2.11 shows the number and proportion of business enterprise start-ups and closures by sector in 2009. The CBSE&P sector had the second highest number of business enterprise start-ups at almost 36,000 which accounted for 15 per cent of all economy business enterprise start-ups and was second only to Wholesale and retail trade which had nearly 39,000 accounting for 16 per cent of all business enterprise start-ups. The sector had, however, the highest number of enterprise business closures with just over 51,000 in 2009 which accounted for 18 per cent of all business enterprise closures.

The ratio of closures to start-ups, at 1.4 for the sector, is slightly higher than the average for the whole economy (1.2).

Table 2.11: Business (enterprise) start-ups and closures (UK) (2009)

Sector	**Start-ups**	**Closures**
	Number	**Number**
Agriculture, forestry and fishing (SIC 75 only)	285	190
Energy production and utilities	1,270	408
Manufacturing	10,570	15,445
Construction, building services engineering and planning	35,835	51,040
Wholesale and retail trade	38,760	47,090
Transportation and storage	6,980	10,805
Hospitality, tourism and sport	23,345	28,030
Information and communication technologies	16,120	19,935
Creative media and entertainment	24,290	20,805
Financial, insurance & other professional services	25,640	25,765
Real estate and facilities management	12,805	16,275
Government services (SIC 94 only)	1,010	1,260
Education	3,485	3,160
Health	4,135	3,110
Care	2,745	2,165
Other sectors	28,750	32,135
All economy	**236,025**	**277,618**

Source: Business Demography - Enterprise Births, Deaths and Survivals 2009, Office National Statistics.

In comparison Wholesale, retail and trade in 2009 had just over 47,000 which accounted for 17 per cent of all business enterprise closures.

This high level of business start-ups suggests an entrepreneurial spirit in the sector and may reflect people setting up business on their own as self-employed workers following a period working for a larger company. The high level of business failures, however, recognises that the sector is volatile and competitive, although it should be noted that business conditions were particularly difficult in 2009 as a result of the impact of the recession. It may be that many people whose businesses fail leave the sector to work elsewhere and do not return. The high level of business failures in the CBSE&P sector may indicate that additional support is needed for new businesses, it could be that some of the workforce lack the managerial or business skills needed to make a transition to self-employment.

2.1.3 Extent to which sector employers compete internationally

Construction is a site-specific process and as such it is relatively difficult to measure the size of its export market. Many UK firms work overseas and vice versa, although they often employ local staff and often set up local subsidiaries. The picture has also been clouded by the acquisition of many UK firms by international conglomerates. However, of those UK construction companies that work overseas the majority tend to do so in the Middle East and the United States rather than Europe. The situation is slightly more complicated in respect of professional services, as they can work on a UK project in Singapore, for example, and vice versa.

With the exception of professional services the construction sector has previously been relatively immune to off shoring, although increasing levels of technological change might hasten a move away from traditional construction methods towards manufacturing, which could be undertaken outside the UK. The aggregation of firms through mergers and acquisitions, prompted in some cases as a means of surviving the recession, and often involving non-UK companies, might itself result in certain construction activities being moved away from the UK. The impact of such actions in terms of their environmental cost may conspire to safeguard certain construction activities, certainly those involving significant levels of labour input.

The Pink Book[5] provides headline statistics for UK construction trade in services - the provision of services by UK residents to non-residents and vice versa. Construction services covers work done on construction projects and installations by employees of an enterprise in locations outside the resident economic territory of the enterprise.

[5] *United Kingdom Balance of Payments: The Pink Book.* Office National Statistics (2011)

Table 2.12 shows the trade in services for the UK construction sector from 2007-2010. In 2010 UK residents provided construction services with value of £1.22 billion outside the UK, although non-UK residents provided construction services with an almost identical value of £1.23 billion to the UK hence the balance of payments was -£11 million (more services were imported than exported). In the three years prior to 2010 the sector had positive net export values (more value was exported than imported) with an average value of £186 million. It is very likely that the global recession has led to decreased imports and exports for construction services in 2010 compared to 2009. Indeed, the worldwide decline in construction activity has most notably impacted on UK professional services, and has been particularly visible in the reduced demand across the Middle East and Asia.

UK construction export has tended to focus on high-value services such as engineering consultancy and design, architectural activities, and property management, which have been hit particularly hard during the recession.

Table 2.12: Trade in Services (UK) (2007-2010) (£ million)

Sector	Exports				Imports				Balance of Payments			
	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010
Construction	996	1,246	1,561	1,218	805	1,095	1,346	1,229	191	151	215	-11

Source: United Kingdom Balance of Payments: The Pink Book (Office National Statistics 2011)

At the end of 2011 Building magazine published a white paper[6] which included findings from a survey and face to face interviews with 75 CEOs across the built environment.

The CEO of a quantity surveyor with a turnover of more than £150 million said: 'I expect to see a greater focus on globalisation – people will look outside the UK for growth. Davis Langdon, Turner & Townsend, EC Harris and the like are all pretty global already but the next tier down are dependent on the UK for revenues and will have a tough time.' Although using a low survey base size the survey indicates that small and medium firms are less able to compete globally and are more reliant on UK revenues.

Most of the 75 surveyed were also aware of the potential threats of globalisation given that almost 40 per cent said they were either fairly or very concerned about the threat of international competitors winning work in the UK.

According to a 2011 report[7] published by Oxford Economics and Global Construction Perspectives the global Construction market is forecast to grow to £7.5 trillion by 2020, up

[6] *White Papers: 03/CEO State of the Nation,* www.building.co.uk (2011)
[7] *Global Construction 2020,* Oxford Economics and Global Construction Perspectives (2011). All construction output forecasts in the report use a model of the global construction sector. This model is linked to Oxford Economics Global Economic Model – a widely used commercial model of world economics.

by £3 trillion from 2010 £4.5 billion. By 2020 construction output is forecast to account for about 13 per cent of the world's GDP - with some of the larger emerging markets such as China, India, Russia, Brazil and Poland driving growth, along with the US.

According to the research China alone was expected to be responsible for almost a third of the growth over the period, and its construction market has already overtaken that of the US as a result of investment in power generation and other infrastructure along with high speed rail.

The wider Asia Pacific region and specifically Vietnam and Indonesia are also a major source of growth, averaging more than seven per cent over the next decade. Other developing countries expected to see significant construction spending include India, Turkey, Romania, Nigeria and Qatar while in the developed world, Australia, Canada and the US are all forecast to see substantial growth.

2.2 Employment

2.2.1 Employment level

Table 2.13 shows that in 2010 almost 2.7 million people were employed in the CBSE&P sector across the whole of the UK. The CBSE&P sector accounted for nine per cent of UK employment (nine per cent England, Wales and Northern Ireland and ten per cent Scotland employment) and in terms of total employment numbers it was the fourth largest UK sector. Around 84 per cent of the sector workforce was employed in England, nine per cent in Scotland, four per cent in Wales and three per cent in Northern Ireland.

Table 2.13: Total employment by sector and nation (2010)

	UK		England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%	000s	%
Agriculture, forestry and fishing	406	100	296	73	51	13	31	8	27	7
Energy production and utilities	473	100	346	73	88	19	25	5	14	3
Manufacturing	2,970	100	2,542	86	199	7	138	5	91	3
Construction, building services engineering and planning	2,697	100	2,270	84	244	9	113	4	71	3
Wholesale and retail trade	4,140	100	3,471	84	353	9	205	5	112	3
Transportation and storage	1,448	100	1,252	86	117	8	46	3	33	2
Hospitality, tourism and sport	2,046	100	1,704	83	198	10	100	5	44	2
Information and communication technologies	761	100	675	89	56	7	18	2	13	2
Creative media and entertainment	987	100	876	89	65	7	32	3	14	1
Financial, insurance & other professional services	2,001	100	1,768	88	138	7	53	3	41	2
Real estate and facilities management	978	100	848	87	75	8	38	4	18	2
Government services	2,209	100	1,835	83	173	8	111	5	89	4
Education	3,088	100	2,625	85	235	8	154	5	75	2
Health	2,087	100	1,713	82	199	10	111	5	64	3
Care	1,729	100	1,409	81	183	11	97	6	40	2
Whole Economy	28,855	100	24,331	84	2,446	8	1,312	5	766	3
Unweighted bases	*194.448*	100	*161.501*	83	*17.022*	9	*8.693*	4	*7.232*	4

Note: 2010 data is based on SIC2007.

Source: Labour Force Survey 2010, Office National Statistics.

2.2.2 Distribution of employment (in a spatial and sub-sectoral context)

Table 2.14 shows the distribution of employment by sector by English region in 2010. Employment in the CBSE&P sector was spread fairly evenly across the English regions ranging in percentage terms from nine to ten per cent of total employment in each region. The sector was the fourth largest employment sector across all regions except for the South-East where it was the third largest.

Table 2.14: Total employment by sector and English region (2010) (% share within region)

	London	South East	East of England	South West	West Midlands	East Midlands	Yorkshire and the Humber	North West	North East
Agriculture, forestry and fishing	*	1	1	3	2	2	1	1	1
Energy production and utilities	1	2	1	2	2	2	1	2	2
Manufacturing	4	9	11	11	14	15	12	12	11
Construction, building services engineering and planning	9	10	10	9	9	9	9	9	9
Wholesale and retail trade	12	14	14	14	14	16	16	16	15
Transportation and storage	5	5	5	4	5	6	5	5	4
Hospitality, tourism and sport	8	7	6	7	7	7	7	7	7
Information and communication technologies	3	4	3	3	2	2	2	2	2
Creative media and entertainment	8	4	3	3	2	2	2	2	2
Financial, insurance & other professional services	13	8	8	6	6	5	6	6	4
Real estate and facilities management	5	4	3	4	3	3	3	4	3
Government services	8	8	7	7	7	7	8	8	9
Education	10	11	11	11	11	11	11	10	11
Health	6	7	6	7	7	7	8	8	8
Care	5	5	5	6	6	5	6	6	8
Whole Economy	100	100	100	100	100	100	100	100	100
Weighted base	3,726	4,147	2,779	2,515	2,413	2,099	2,382	3,126	1,145
Unweighted bases	*18.925*	*26.614*	*18.998*	*17.015*	*16.534*	*15.044*	*17.467*	*22.418*	*8.486*

*Note: * indicates sample size too small for reliable estimate so data has been supressed. 2010 data is based on SIC2007.*
Source: Labour Force Survey 2010, Office National Statistics.

Table 2.15 shows the trend in total UK employment from 2002 to 2010 by sector. The CBSE&P sector from 2002 to 2010 grew in employment numbers by 21 per cent, this growth was the third highest of all sectors. The data indicates that employment in the sector peaked in 2009 at almost 2.9 million but due to the recession fell by 178,000 (six per cent) to just under 2.7 million in 2010. This fall was by far the largest in absolute and percentage terms across all sectors. It clearly shows that the sector in terms of total employment numbers has been hard hit by the economic downturn.

Table 2.15: Total employment by sector (UK) (2002-2010)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	000s	000s	000s	000s	000s	000s	000s	000s	000s
Agriculture, forestry and fishing	394	389	396	421	417	422	448	364	406
Energy production and utilities	434	389	407	422	436	479	486	483	473
Manufacturing	4,153	3,870	3,687	3,615	3,562	3,575	3,368	2,915	2,970
Construction, building services engineering and planning	2,223	2,333	2,434	2,500	2,560	2,615	2,639	2,875	2,697
Wholesale and retail trade	4,368	4,545	4,536	4,489	4,404	4,349	4,446	4,143	4,140
Transportation and storage	1,486	1,485	1,461	1,511	1,501	1,490	1,517	1,489	1,448
Hospitality, tourism and sport	1,718	1,720	1,730	1,714	1,773	1,807	1,799	1,991	2,046
Information and communication technologies	813	813	839	832	835	851	871	784	761
Creative media and entertainment	1,102	1,139	1,108	1,111	1,138	1,142	1,156	975	987
Financial, insurance & other professional services	1,671	1,662	1,623	1,677	1,696	1,744	1,736	2,038	2,001
Real estate and facilities management	898	869	924	946	984	1,036	1,028	948	978
Government services	2,115	2,166	2,194	2,251	2,282	2,285	2,323	2,265	2,209
Education	2,295	2,414	2,543	2,580	2,642	2,636	2,664	2,939	3,088
Health	1,811	1,881	1,980	2,048	2,079	2,033	2,118	2,038	2,087
Care	1,288	1,338	1,408	1,456	1,479	1,446	1,506	1,721	1,729
Whole Economy	27,908	28,172	28,456	28,740	28,987	29,164	29,382	28,811	28,855
Unweighted base	*247.273*	*238.005*	*230.951*	*227.794*	*222.196*	*221.046*	*217.000*	*203.221*	*194.448*

Note: Data before 2009 is based on SIC2003 and data for 2009 and 2010 is based on SIC2007.
Source: Labour Force Survey 2010, Office National Statistics.

Table 2.16 shows 2010 employment in the CBSE&P sector by 2 digit sector component. In 2010 just over four in ten (42 per cent) of the workforce were employed in Specialised construction activities, nearly three in ten (30 per cent) of the workforce were employed in Construction of buildings, nearly one in five (18 per cent) were employed in the group Architects and one in ten (10 per cent) were employed in the Civil engineering group.

Table 2.16: Total employment in CBSE&P sector by 2 Digit SIC 07 Code (UK) (2010)

SIC07 2 Digit Code	Description	UK Employment (000s)	%
41	Construction of buildings	806	30%
42	Civil engineering	283	10%
43	Specialised construction activities	1,132	42%
71	Architects	476	18%
Total		2,697	100%

Note: 2010 data is based on SIC2007.
Source: Labour Force Survey 2010, Office National Statistics

3 The workforce

Chapter Summary

- Note all figures in this chapter summary are 2010 at UK level unless otherwise specified.
- Skilled trades occupations accounted for 44 per cent of employment in the CBSE&P sector compared to the all economy proportion of 11 per cent.
- The largest occupational groups within the CBSE&P sector were Carpenters and joiners, Construction trades not elsewhere classified and Managers in construction which each accounted for seven per cent of the workforce respectively.
- 90 per cent of the CBSE&P sector workforce was employed full-time with the remaining 10 per cent part-time. This level of full-time employment is high compared to the average across all sectors in the economy (73 per cent) although similar to sectors such as Manufacturing (91 per cent) and Energy production and utilities (92 per cent).
- At 36 per cent the CBSE&P sector workforce had the second highest proportion of self-employment of all the sectors, second only to Agriculture, forestry and fishing (50 per cent). This proportion was much higher than the average across the whole economy workforce of 14 per cent self-employment.
- The figures indicate that in the CBSE&P sector there were 13,000 unpaid family workers which accounted for almost half a percentage of the workforce (0.47 per cent).
- Temporary workers accounted for a small share of the sector's workforce, four per cent in 2010. This proportion was similar to comparable sectors such as Manufacturing (four per cent) although much lower than that recorded in Education (11 per cent) and Hospitality, tourism and sport (10 per cent) and lower than the whole economy average (six per cent).
- The CBSE&P sector workforce had the fourth highest proportion of all sectors of employment of those born in the UK (91 per cent) compared to the whole economy average (87 per cent). The sector had the same proportion of employment born in the rest of Europe (EU 27) as the whole economy average (five per cent). As might be expected the corresponding proportion of employment for those born in the rest of the world in the sector (five per cent) was slightly lower than the whole economy average (eight per cent).

- In the CBSE&P sector just over one in ten of the sector workforce (13 per cent) was female compared to the whole economy average of almost half (46 per cent). In comparison to other sectors the sector had the lowest proportion of female employment of all sectors.

3.1 Working patterns

3.1.1 Full and part-time employment

Table 3.1 shows working hours by sector in the UK in 2010 (full-time work is defined as more than or equal to 30 hours per week). Nine in ten (90 per cent) of the CBSE&P sector workforce were employed full-time with the remainder one in ten (10 per cent) part-time. This level of full-time employment was high compared to the average across all sectors in the economy (73 per cent) although similar to sectors such as Manufacturing (91 per cent) and Energy production and utilities (92 per cent).

Table 3.1: Working hours by sector (UK) (2010)

	Full-time	Part-time	Full-time	Part-time	Weighted base	Unweighted base
	000s	000s	%	%	000s	000s
Agriculture, forestry and fishing	326	79	80	20	406	3
Energy production and utilities	435	38	92	8	473	3
Manufacturing	2,688	281	91	9	2,969	20
Construction, building services engineering and planning	2,435	260	90	10	2,695	18
Wholesale and retail trade	2,549	1,590	62	38	4,139	28
Transportation and storage	1,218	229	84	16	1,447	10
Hospitality, tourism and sport	1,127	920	55	45	2,046	13
Information and communication technologies	682	79	90	10	761	5
Creative media and entertainment	737	249	75	25	986	6
Financial, insurance & other professional services	1,623	377	81	19	2,001	13
Real estate and facilities management	643	334	66	34	977	7
Government services	1,800	408	82	18	2,208	15
Education	1,872	1,215	61	39	3,087	22
Health	1,344	742	64	36	2,086	15
Care	1,056	672	61	39	1,728	12
All economy	21,083	7,760	73	27	28,843	194

Note: 2010 data is based on SIC2007.
Source(s): Labour Force Survey 2010, Office National Statistics.

Table 3.2 shows working hours by sector and nation in 2010. The proportion of full-time employment for the CBSE&P sector was fairly even across the home nations ranging from 90 per cent to 93 per cent. This level of variation across the nations (maximum of three percentage points) was one of the smallest across all of the sectors.

Table 3.2: Working hours by sector and nation (2010)

	England				Scotland				Wales				Northern Ireland			
	Full-time	Part-time	Weighted base	Unweighted base	Full-time	Part-time	Weighted base	Unweighted base	Full-time	Part-time	Weighted base	Unweighted base	Full-time	Part-time	Weighted base	Unweighted base
	%	%	000s	000s	%	%	000s	000s	%	%	000s	000s	%	%	000s	000s
Agriculture, forestry and fishing	79	21	296	2.112	83	17	51	0.385	85	*	31	0.198	88	*	27	0.281
Energy production and utilities	92	8	346	2.336	91	9	88	0.620	96	*	25	0.157	92	*	14	0.131
Manufacturing	90	10	2,541	17.233	92	8	199	1.431	93	7	138	0.905	93	*	91	0.831
Construction, building services engineering and planning	90	10	2,268	14.834	93	7	244	1.702	93	7	112	0.717	93	*	71	0.664
Wholesale and retail trade	62	38	3,469	22.822	58	42	352	2.369	57	42	205	1.325	63	37	112	1.055
Transportation and storage	84	16	1,251	8.292	83	17	117	0.822	80	23	46	0.308	87	*	33	0.307
Hospitality, tourism and sport	55	45	1,704	10.849	52	48	198	1.295	51	49	100	0.636	62	38	44	0.403
Information and communication technologies	90	10	675	4.269	89	11	56	0.377	88	*	18	0.114	88	*	13	0.115
Creative media and entertainment	75	25	875	5.406	68	32	64	0.436	70	23	32	0.214	72	*	14	0.130
Financial, insurance & other professional services	82	18	1,768	11.123	78	22	138	0.948	77	22	53	0.358	81	19	41	0.375
Real estate and facilities management	65	35	847	5.623	73	27	75	0.519	63	35	38	0.254	74	*	18	0.165
Government services	81	19	1,835	12.302	84	16	173	1.210	81	23	111	0.744	84	16	89	0.842
Education	60	40	2,624	18.075	64	36	234	1.677	66	32	154	1.059	67	33	75	0.726
Health	64	36	1,712	11.931	65	35	198	1.409	67	31	111	0.771	71	29	64	0.631
Care	61	39	1,409	9.629	60	40	183	1.308	61	40	97	0.665	62	38	40	0.399
All economy	73	27	24,321	161.435	73	27	2,444	17.008	72	27	1,311	8.689	77	23	766	7.231

Notes: 2010 data is based on SIC2007. indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

3.1.2 Self-employment

Table 3.3 shows employment status by sector in the UK in 2010. The CBSE&P sector at 36 per cent had the second highest proportion of self-employment of all the sectors, second only to Agriculture, forestry and fishing (50 per cent). This level of self-employment was 2.6 times the level across the whole economy (14 per cent).

Table 3.3: Employment status by sector (2010)

	Employee	Self-employed	Employee	Self-employed	Weighted base	Unweighted base
	000s	000s	%	%	000s	000s
Agriculture, forestry and fishing	189	202	47	50	405	3
Energy production and utilities	446	25	95	5	472	3
Manufacturing	2,776	184	94	6	2,968	20
Construction, building services engineering and planning	1,716	964	64	36	2,692	18
Wholesale and retail trade	3,731	390	90	9	4,133	28
Transportation and storage	1,194	250	83	17	1,447	10
Hospitality, tourism and sport	1,817	219	89	11	2,044	13
Information and communication technologies	635	124	84	16	761	5
Creative media and entertainment	672	310	68	31	987	6
Financial, insurance & other professional services	1,706	291	85	15	2,001	13
Real estate and facilities management	744	229	76	23	977	7
Government services	2,145	58	97	3	2,207	15
Education	2,891	188	94	6	3,082	22
Health	1,928	155	92	7	2,085	15
Care	1,577	140	92	8	1,723	12
All economy	24,774	3,952	86	14	28,817	194

Source: Labour Force Survey 2010, Office National Statistics.

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 essential 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. ConstructionSkills' research[8] showed that the incidence of self-employment rises from around one in five (19 per cent) among people with one to two years' experience to around one in three (32 per cent) 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.

Table 3.4 shows employment status in 2010 by sector and nation. In the UK in 2010 36 per cent of the CBSE&P sector workforce was self-employed, England 37 per cent, Scotland 23 per cent, Wales 35 per cent and Northern Ireland 45 per cent. Across the UK economy 14 per cent of the workforce was self-employed.

[8] ConstructionSkills (2007) *Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland*. Available: http://www.cskills.org/sectorskills/researchfromssc/mobility_and_skills2007.aspx. [Accessed 21st November 2011]. The survey sample included face to face interviews with 3,877 workers across 312 sites in the UK/ROI, refer to the methodology section for more details.

Table 3.4: Employment status by sector and nation (2010)

	England				Scotland				Wales				Northern Ireland			
	Employee	Self-employed	Weighted base	Unweighted base	Employee	Self-employed	Weighted base	Unweighted base	Employee	Self-employed	Weighted base	Unweighted base	Employee	Self-employed	Weighted base	Unweighted base
	%	%	000s	000s	%	%	000s	000s	%	%	000s	000s	%	%	000s	000s
Agriculture, forestry and fishing	50	46	295	2.110	49	50	51	0.385	33	62	31	0.197	*	75	*27*	0.281
Energy production and utilities	94	6	346	2.334	95	*	87	0.619	99	*	25	0.157	95	*	*14*	0.130
Manufacturing	93	6	2,540	17.229	95	5	199	1.432	94	6	138	0.905	93	7	*91*	0.831
Construction, building services engineering and planning	63	37	2,266	14.822	77	23	244	1.701	65	35	112	0.717	55	45	*70*	0.657
Wholesale and retail trade	91	9	3,466	22.800	91	9	351	2.359	86	14	204	1.323	84	16	*112*	1.052
Transportation and storage	83	17	1,252	8.294	85	15	117	0.820	76	23	46	0.308	77	23	*33*	0.307
Hospitality, tourism and sport	89	10	1,702	10.836	89	11	198	1.295	87	12	100	0.634	82	17	*44*	0.403
Information and communication technologies	84	16	674	4.266	82	18	56	0.377	77	*	18	0.113	87	*	*13*	0.115
Creative media and entertainment	68	32	875	5.409	76	24	65	0.438	60	39	32	0.214	75	*	*14*	0.130
Financial, insurance & other professional services	85	15	1,768	11.122	90	10	138	0.948	81	19	53	0.359	92	*	*41*	0.375
Real estate and facilities management	75	24	847	5.624	85	15	75	0.520	78	21	37	0.252	67	*	*18*	0.165
Government services	97	3	1,834	12.298	97	3	173	1.209	97	*	111	0.742	99	*	*89*	0.842
Education	94	6	2,619	18.049	95	5	234	1.676	96	4	153	1.056	95	*	*75*	0.726
Health	92	8	1,712	11.930	94	6	199	1.410	92	8	111	0.769	95	*	*64*	0.631
Care	91	9	1,404	9.601	93	6	183	1.306	95	*	97	0.665	90	*	*40*	0.399
All economy	86	14	24,301	161.314	89	11	2,442	16.995	85	14	1,309	8.674	84	16	765	7.217

*Notes: Weighted & unweighted bases also include unpaid family worker. * indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

Table 3.5: Employment status by sector and nation (2010) (000's)

	UK			England			Scotland			Wales			Northern Ireland		
	Employee	Self-employed	Unpaid family worker	Employee	Self-employed	Unpaid family worker	Employee	Self-employed	Unpaid family worker	Employee	Self-employed	Unpaid family worker	Employee	Self-employed	Unpaid family worker
Agriculture, forestry and fishing	189	202	14	149	136	11	25	26	*	10	19	*	*	21	*
Energy production and utilities	446	25	*	325	21	*	83	*	*	25	*	*	13	*	*
Manufacturing	2,776	184	8	2,372	161	8	190	9	*	130	8	*	84	6	*
Construction, building services engineering and planning	1,716	964	13	1,417	838	11	187	55	*	73	39	*	39	31	*
Wholesale and retail trade	3,731	390	12	3,141	314	11	320	30	*	176	28	*	94	18	*
Transportation and storage	1,194	250	*	1,035	215	*	99	18	*	35	10	*	25	7	*
Hospitality, tourism and sport	1,817	219	8	1,518	177	7	176	22	*	87	12	*	36	8	*
Information and communication technologies	635	124	*	564	108	*	46	10	*	14	*	*	12	*	*
Creative media and entertainment	672	310	*	592	279	*	49	16	*	19	13	*	11	*	*
Financial, insurance & other professional services	1,706	291	*	1,501	264	*	125	13	*	43	10	*	38	*	*
Real estate and facilities management	744	229	*	639	204	*	64	11	*	29	8	*	12	*	*
Government services	2,145	58	*	1,783	48	*	167	*	*	108	*	*	88	*	*
Education	2,891	188	*	2,451	166	*	222	12	*	147	6	*	71	*	*
Health	1,928	155	*	1,579	131	*	187	11	*	102	9	*	61	*	*
Care	1,577	140	6	1,278	120	*	171	12	*	92	*	*	36	*	*
All economy	24,774	3,952	92	20,853	3,370	79	2,164	273	*	1,118	185	*	639	124	*

*Note: * indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

Table 3.5 shows employment status in 2010 by sector and nation including unpaid family members. Although much of the data in the table is suppressed due to small base sizes the figures indicate that in the CBSE&P sector there were 13,000 unpaid family workers which accounted for less than half a percentage of the workforce (0.47 per cent across the UK). The data suggests that there were 11,000 unpaid family workers in the sector in England. Although base sizes across sectors are too small to allow comparison the table shows that the sector had the second highest number of unpaid family workers of the sectors with available data, second only to Agriculture, forestry and fishing.

As discussed in section 2.1.2 the CBSE&P sector is characterised by a large number of small firms. Many of these firms employ family members either on a full-time, part-time or unpaid basis to help with the business.

3.1.3 Contract Type

Table 3.6 shows numbers and proportions of permanent and temporary employees by sector in 2010. The CBSE&P sector has a low proportion of temporary workforce at four per cent. This level is similar to sectors such as Manufacturing (four per cent) although much lower than that recorded in Education (11 per cent) and Hospitality, tourism and sport (10 per cent) and lower than the whole economy average (six per cent).

Table 3.6: Permanent and temporary employees by sector UK (2010)

	Permanent	Temporary	Permanent	Temporary	Weighted base	Unweighted base
	000s	000s	%	%	000s	000s
Agriculture, forestry and fishing	181	8	96	4	189	1.306
Energy production and utilities	430	16	96	4	446	3.060
Manufacturing	2652	123	96	4	2775	18.984
Construction, building services engineering and planning	1648	66	96	4	1714	11.317
Wholesale and retail trade	3573	156	96	4	3728	24.614
Transportation and storage	1132	62	95	5	1194	7.970
Hospitality, tourism and sport	1631	183	90	10	1814	11.563
Information and communication technologies	612	22	97	3	635	4.048
Creative media and entertainment	615	56	92	8	671	4.181
Financial, insurance & other professional services	1651	55	97	3	1706	10.835
Real estate and facilities management	704	39	95	5	743	4.957
Government services	2028	117	95	5	2145	14.642
Education	2563	327	89	11	2890	20.195
Health	1825	103	95	5	1928	13.639
Care	1474	103	93	7	1576	10.953
All economy	23247	1513	94	6	24760	166.200

Source: Labour Force Survey 2010, Office National Statistics.

The CBSE&P 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.

These workers are likely to be from other parts of the country, or from abroad. Indeed, research[9] indicates that the construction workforce is very mobile with just over half of workers (54 per cent) having worked on sites outside the current nation/region and for one in five (20 per cent), half or less of their time has been spent working on sites in their current nation/region.

Those currently working in Scotland and in Northern Ireland were particularly likely to have spent all their time in construction on sites within the same nation or region (68 per cent and 64 per cent respectively). By contrast, in London and the East Midlands around a quarter had spent all their time on sites within the region (28 per cent and 26 per cent respectively).

Overall seven per cent of workers interviewed were based at a temporary address to get to work. Workers employed on a temporary basis were more likely to say they were living at a temporary address (12 per cent of temporary workers versus six per cent of permanent workers), as were workers who haven't been in the industry long (18 per cent of those with less than a year's experience versus six per cent of those with five or more year experience).

The mean average distance travelled to work (each way) was 24 miles and the median average was 18 miles. A quarter of workers (24 per cent) reported travelling less than five miles with three in five (64 per cent) travelling less than 25 miles. One in ten (10 per cent) were travelling over fifty miles each way to work. Workers in the Republic of Ireland, Scotland and the South West were most likely to report that they travel five miles or less. One in ten workers (10 per cent) reported travelling over 50 miles to work; such long journeys were most prevalent in the East of England and the South East.

Table 3.7 shows employment status numbers and proportions in 2010 for the CBSE&P sector by sub-sector (as defined by 2 digit SIC codes). The data highlights a low proportion of part-time employment (seven per cent) for the Civil engineering group compared to the sector average (10 per cent). The proportions of self-employment for the groups Architects (28 per cent) and Civil engineering (15 per cent) are much lower than the sector average (36 per cent).

[9] ConstructionSkills (2007) *Workforce Mobility and Skills in the Construction Sector in the UK and Republic of Ireland*. Available: http://www.cskills.org/sectorskills/researchfromssc/mobility_and_skills2007.aspx. [Accessed 21st November 2011]. The survey sample included face to face interviews with 3,877 workers across 312 sites in the UK/ROI, refer to the methodology section for more details.

Table 3.7: Employment status CBSE&P Sector by 2 Digit SIC code (2010) ('000s)

SIC07 2 Digit Code	Description	Full time	Part-time	Employee	Self-employed	Unpaid family worker	Permanent	Temporary
000s								
41	Construction of buildings	728	78	503	296	*	477	26
42	Civil engineering	265	18	246	37	*	235	12
43	Specialised construction activities	1031	100	596	528	*	579	16
71	Architects	411	65	370	103	*	357	12
Total		2,435	260	1,716	964	*	1,648	66
%								
41	Construction of buildings	90.3%	9.7%	63.0%	37.0%	*	94.8%	5.2%
42	Civil engineering	93.8%	6.2%	87.0%	13.0%	*	95.3%	4.7%
43	Specialised construction activities	91.2%	8.8%	53.0%	47.0%	*	97.2%	2.8%
71	Architects	86.4%	13.6%	78.2%	21.8%	*	96.7%	3.3%
Total		90.4%	9.6%	64.0%	36.0%	*	96.1%	3.9%

*Note: * indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

This data reflects the structure and nature of work undertaken by businesses within the sub-sectors (as defined by 2 digit SIC codes). The professional side of the workforce which includes the groups Architects and Civil engineering is much more likely to be employed on a permanent basis at regular offices. There is more flexibility in these roles for a proportion of the workforce to be employed on a part-time basis. On the more traditional side of the workforce many workers will include skilled hands-on tradespeople who are more likely although not exclusively to be self-employed and are needed on-site on a more full-time basis. A higher proportion of these workers may be employed on a temporary project-by-project basis.

3.2 The jobs people do

3.2.1 Occupational structure

Table 3.8 shows employment within the whole economy by occupation and nation in 2010. Proportions of employment by occupation are generally comparable across the home nations. The greatest difference in proportion (six percentage points maximum) occurs for Skilled Trade Occupations (16 per cent) in Northern Ireland compared to England (10 per cent).

Table 3.8: Employment by occupation within the Whole Economy by nation (2010)

	UK		England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%	000s	%
Managers and Senior Officials	4,455	15	3,866	16	331	14	173	13	85	11
Professional Occupations	4,028	14	3,454	14	299	12	176	13	100	13
Associate Professional and Technical	4,265	15	3,638	15	353	14	186	14	88	12
Administrative and Secretarial	3,181	11	2,670	11	270	11	135	10	106	14
Skilled Trades Occupations	3,061	11	2,502	10	285	12	149	11	125	16
Personal Service Occupations	2,544	9	2,123	9	226	9	131	10	64	8
Sales and Customer Service Occupations	2,146	7	1,772	7	209	9	111	8	54	7
Process, Plant and Machine Operatives	1,907	7	1,570	6	174	7	99	8	63	8
Elementary Occupations	3,257	11	2,724	11	300	12	153	12	81	11
All occupations	28,842	100	24,319	100	2,446	100	1,311	100	765	100
Unweighted base	*194.372*		*161.438*		*17.020*		*8.690*		*7.224*	

Source: Labour Force Survey 2010, Office National Statistics.

Table 3.9 shows employment by occupation for the CBSE&P sector and all economy in 2010. The greatest difference in the proportion of employment by occupation for the sector compared to the whole economy occurs in skilled trades occupations, these occupations accounted for 43 per cent of employment in the sector compared to the all economy proportion of 11 per cent. In comparison, the sector had a lower proportion of employment for Associate, professional and technical (eight per cent lower), Sales and customer service (six per cent lower), elementary (five per cent lower) and administrative and secretarial (four per cent lower) occupations compared to the whole economy. All other occupations within the sector had proportions of employment that are within one percentage point of those in the whole economy.

Table 3.9: Employment by occupation CBSE&P Sector and All economy (UK) (2010)

	Construction		All economy	
	000s	%	000s	%
Managers and Senior Officials	434	16	4,455	15
Professional Occupations	353	13	4,028	14
Associate Professional and Technical	188	7	4,265	15
Administrative and Secretarial	180	7	3,181	11
Skilled Trades Occupations	1,157	43	3,061	11
Personal Service Occupations	*	*	2,544	9
Sales and Customer Service Occupations	23	1	2,146	7
Process, Plant and Machine Operatives	187	7	1,907	7
Elementary Occupations	168	6	3,257	11
All occupations	2,696	100	28,842	100
Unweighted base	*17.925*		*194.372*	

*Notes: 2010 data is based on SIC2007. Cell sizes <6,000 have been suppressed and are indicated with a *.*
Source: Labour Force Survey 2010, Office National Statistics.

Taking the analysis of the Labour Survey 2010 down to the most detailed unit group level of the Standard Occupational Classification, the largest occupations in UK employment terms are (in descending order) *Carpenters and joiners* (accounting for seven per cent of total employment in the sector), *Managers in construction* (7 per cent), *Plumbing, heating and ventilation engineers* (6 per cent) and *Electricians / electrical fitters* (6 per cent).

Table 3.10 shows employment by occupation for the CBSE&P sector by nation. Although some cells have been suppressed due to small base sizes the proportions of employment by occupation for most occupations are broadly comparable across the nations.

Table 3.10: Employment by occupation CBSE&P Sector by nation (UK) (2010)

	England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%
Managers and Senior Officials	379	17	37	15	13	12	*	7
Professional Occupations	302	13	32	13	13	11	7	10
Associate Professional and Technical	157	7	22	9	8	7	*	*
Administrative and Secretarial	154	7	15	6	*	*	*	7
Skilled Trades Occupations	967	43	94	39	53	47	43	60
Personal Service Occupations	*	*	*	*	*	*	*	*
Sales and Customer Service Occupations	18	*	*	*	*	*	*	*
Process, Plant and Machine Operatives	151	7	21	9	10	9	*	7
Elementary Occupations	137	6	20	8	8	7	*	*
All occupations	2269	100	244	100	113	100	71	100

*Notes: 2010 data is based on SIC2007. Cell sizes <6,000 have been suppressed and are indicated with a *.*
Source: Labour Force Survey 2010, Office National Statistics.

The main difference appears to occur for skilled trades occupations where Northern Ireland had a higher proportion (60 per cent) employed in this occupation than the UK average (43 per cent). Base sizes are too small for many of the other occupations but a likely explanation may be that as for the whole economy Northern Ireland had a lower proportion of employment by occupation within managers and senior officials and associate professional and technical occupations.

Table 3.11 shows employment by occupation for the CBSE&P sector by 2 digit SIC component. The data indicates that the groups construction of buildings and specialised construction activities contain a higher than average proportion of employment by occupation for Skilled trades occupations than the sector average (31 per cent and 63 per cent) respectively compared to UK average (43 per cent). This is likely to reflect the higher levels of tradespeople employed in these groups.

Table 3.11: Employment by occupation CBSE&P Sector by 2 Digit SIC code (UK) (2010)

SIC07 2 Digit Code	Description	Managers and Senior Officials	Professional Occupations	Associate Professional and Technical	Administrative and Secretarial	Skilled Trades Occupations	Personal Service Occupations	Sales and Customer Service Occupations	Process, Plant and Machine Operatives	Elementary Occupations	Total
41	Construction of buildings	171	51	37	52	360	*	*	47	78	796
42	Civil engineering	55	55	25	24	37	*	*	51	34	281
43	Specialised construction activities	115	50	32	66	734	*	10	76	49	1132
71	Architects	94	197	94	37	26	*	*	13	7	469
Total		434	353	188	180	1,157	*	10	187	168	2,678

*Note: 2010 data is based on SIC2007. Cell sizes <6,000 have been suppressed and are indicated with a *.*
Source: Labour Force Survey 2010, Office National Statistics.

3.3 Workforce characteristics

3.3.1 Gender

Table 3.12 shows employment by gender and nation for the whole economy. Just over half of employment for the UK whole economy was male (54 per cent). There was limited variation between nations (a maximum of three percentage point's difference). Time series data from 2002 to 2010 indicates levels of employment by gender for UK have been remained static over the period varying by a maximum of 0.5 percentage points.

Table 3.12: Employment by gender and nation Whole Economy (2010)

	Male	Female	Total	Male	Female	Total	Unweighted base
	000s	000s	000s	%	%	%	000s
UK	15,439	13,416	28,855	54	46	100	*194.448*
England	13,081	11,250	24,331	54	46	100	*161.501*
Scotland	1,257	1,189	2,446	51	49	100	*17.022*
Wales	692	620	1,312	53	47	100	*8.693*
Northern Ireland	409	358	766	53	47	100	*7.232*

Source: Labour Force Survey 2010, Office National Statistics.

Table 3.13 shows employment by gender and nation in 2010 for the CBSE&P sector. Just over one in ten of the sector workforce (13 per cent) was female compared to the whole economy average of approaching half (46 per cent). In comparison to other sectors (not shown here) the sector had the lowest proportion of female employment of all sectors. Levels of female employment within the sector were broadly similar across the nations ranging from seven per cent in Northern Ireland to 15 per cent in Scotland. Time series data from 2002 to 2010 indicated the proportion of females in the sector at UK level increased by 0.6 per cent over the period to 13.2 per cent in 2010.

Table 3.13: Employment within CBSE&P Sector by gender and nation (2010)

	Male	Female	Total	Male	Female	Total	Unweighted base
	000s	000s	000s	%	%	%	000s
UK	2,342	356	2,697	87	13	100	*17.93*
England	1,968	302	2,270	87	13	100	*14.843*
Scotland	208	36	244	85	15	100	*1.703*
Wales	100	13	113	89	11	100	*0.719*
Northern Ireland	66	5	71	93	7	100	*0.665*

Source: Labour Force Survey 2010, Office National Statistics.

Table 3.14 shows employment by gender by 2 digit SIC code in 2010 for the CBSE&P sector. The proportion of women was much higher for the group Architects (24 per cent) than the sector average (13 per cent). The proportion of women for Specialised construction activities was lower (nine per cent) than the sector average (13 per cent). These differences are likely to reflect the nature of the work involved in each of these groups for example work in Specialised construction activities may be more physically demanding than other sectors and there may be more capacity for part-time work in the group Architects which may make the sectors more or less appealing to female workers.

Table 3.14: Employment by gender CBSE&P Sector by 2 Digit SIC 07 Code (2010) ('000s)

SIC07 2 Digit Code	Description	Male	Female	Total	%Male	%Female
41	Construction of buildings	702	104	806	87%	13%
42	Civil engineering	243	41	283	86%	14%
43	Specialised construction activities	1,036	96	1,132	91%	9%
71	Architects	361	114	476	76%	24%
Total		2,342	356	2,697	87%	13%

Source: Labour Force Survey 2010, Office National Statistics.

Table 3.15 shows employment by gender by broad occupational group for the CBSE&P sector and whole economy in 2010. Similar to the previous tables in this section the data indicates a higher proportion of males employed in the sector compared to the whole economy for all broad occupational groups with the exception of administrative and secretarial occupations (15 per cent) compared to whole economy figure for this occupational group (22 per cent) and personal service occupations for which the base size is too low for reliable estimates.

Table 3.15: Gender profile by broad occupational group (UK) (2010)

	Construction, building services engineering and planning			All economy		
	Male	Female	Total	Male	Female	Total
	%	%	000s	%	%	000s
1 Managers and Senior Officials	82	18	434	65	35	4,455
2 Professional occupations	89	11	353	56	44	4,028
3 Associate Professional and Technical	73	27	188	50	50	4,265
4 Administrative and Secretarial	15	85	180	22	78	3,181
5 Skilled Trades Occupations	99	1	1,157	92	8	3,061
6 Personal Service Occupations	*	*	5	17	83	2,544
7 Sales and Customer Service Occupations	38	62	23	35	65	2,146
8 Process, Plant and Machine Operatives	99	*	187	88	12	1,907
9 Elementary Occupations	95	5	168	55	45	3,257
All occupations	87	13	2,696	54	46	28,842

*Note: * indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

The data indicates that there were a higher proportion of males in the sector for most hands-on type roles such as skilled trade occupations, process, plant and machine operatives and elementary occupations. In other more managerial roles including managers and senior officials, professional occupations and associate professional and technical occupations there were a higher proportion of females employed although levels are not as high as those across the whole economy.

3.3.2 Age profile

Table 3.16 shows the age profile of the whole economy workforce by nation in 2010. The proportions of the workforce by age bracket across the home nations were fairly similar (within five percentage points). The greatest difference from the UK average was found in Northern Ireland where the proportion of those aged 25 to 34 was three percentage points higher than the UK average, suggesting the whole economy workforce was slightly younger in Northern Ireland in comparison to that of the UK workforce.

Table 3.16: Age profile of Whole Economy workforce by nation (2010) ('000s) (% share)

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Under 16	*	*	*	*	*	*	*	*	*	*
16-18	673	2	569	2	58	2	35	3	10	1
19-24	3,037	11	2,541	10	274	11	136	10	85	11
25-34	6,324	22	5,365	22	500	20	267	20	192	25
35-44	7,029	24	5,932	24	589	24	311	24	197	26
45-59	9,331	32	7,826	32	834	34	434	33	236	31
60-64	1,631	6	1,394	6	129	5	79	6	30	4
65 +	831	3	702	3	62	3	49	4	17	2
Total	28,855	100	24,331	100	2,446	100	1,312	100	766	100
Unweighted base	*194.448*		*161.501*		*17.022*		*8.693*		*7.232*	

*Note: * indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

Table 3.17 shows the age profile of the whole economy workforce from 2002-2010. Although the total number employed in 2010 was very similar to that in 2002 there have been some slight shifts in proportions by age bracket. The proportion of the whole economy workforce by age bracket aged 44 or under decreased over the period by almost five per cent, whilst the proportion aged 45 and over increased by the same level over the period. The greatest increase over the period was in the proportion of the workforce aged 45 to 59 (two per cent) and 60 to 64 (1.7 per cent) whilst the greatest decrease was in the proportion of those aged 35 to 44 (1.9 per cent decrease).

Table 3.17: Age profile of Whole Economy workforce (UK) (2002-2010)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	000s	000s	000s	000s	000s	000s	000s	000s	000s
Under 18	1,078	1,076	1,077	1,028	976	938	925	765	673
19-24	2,948	2,973	3,072	3,097	3,179	3,224	3,221	3,048	3,037
25-34	6,505	6,361	6,279	6,289	6,250	6,242	6,279	6,186	6,324
35-44	7,317	7,416	7,490	7,525	7,533	7,528	7,442	7,241	7,029
45-59	8,474	8,638	8,748	8,915	9,017	9,046	9,171	9,182	9,331
60-64	1,107	1,186	1,252	1,306	1,405	1,545	1,652	1,650	1,631
65 +	479	522	538	580	625	641	693	739	831
Total	27,908	28,172	28,456	28,740	28,987	29,164	29,382	28,811	28,855
Unweighted base	*247.273*	*238.005*	*230.951*	*227.794*	*222.196*	*221.046*	*217.000*	*203.221*	*194.448*

Source: Labour Force Survey 2010, Office National Statistics.

Table 3.18 shows the age profile by nation in 2010 for the CBSE&P sector. The UK age profile of the sector was very similar (within one percentage point) to that of the whole economy.

Table 3.18: Age profile of CBSE&P Sector workforce by nation (2010)

	UK		England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%	000s	%
Under 16	*	*	*	*	*	*	*	*	*	*
16-18	34	1	28	1	*	*	*	*	*	*
19-24	260	10	222	10	18	7	12	11	9	12
25-34	586	22	490	22	54	22	22	19	20	28
35-44	657	24	551	24	63	26	26	23	17	25
45-59	892	33	750	33	84	34	40	35	19	27
60-64	192	7	164	7	16	7	9	8	*	*
65 +	75	3	66	3	*	*	*	*	*	*
Total	2,697	100	2,270	100	244	100	113	100	71	100

*Note: * indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

Although some of the data has been suppressed due to small base sizes the data illustrates that there were some differences in the profile of the CBSE&P sector workforce by age bracket across the home nations (greatest difference is nine percentage points). Similar to the profile of the whole economy the greatest differences compared to the UK sector average occurred within Northern Ireland (six percentage points higher for those aged 25 to 34 and six percentage points lower for those aged 40 to 59). Similar to the whole economy this suggests that the sector workforce in Northern Ireland was younger than that in the other home nations.

Table 3.19 shows the same data using more aggregated age brackets for the sector over the period 2002 to 2010. Similar to the whole economy the picture for the sector over the period 2002 to 2010 was one of an ageing workforce. The proportion of the workforce aged 60+ increased by four per cent, the proportion aged 45 to 59 increased by three per cent, the proportion aged 35 to 44 decreased three per cent, the proportion aged 25 to 34 decreased by one per cent and the proportion aged under 25 decreased by three per cent.

Table 3.19: Age profile of CBSE&P Sector workforce (UK) (2002-2010) ('000s)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	000s	000s	000s	000s	000s	000s	000s	000s	000s
Under 25	302	325	342	363	387	403	382	335	295
25-34	512	510	519	528	551	571	555	627	586
35-44	601	642	642	694	679	683	695	742	657
45-59	675	709	756	733	750	748	784	904	892
60+	132	148	175	182	193	210	223	267	267
Total	2,223	2,333	2,434	2,500	2,560	2,615	2,639	2,875	2,697
Unweighted base (000s)	*19.570*	*19.587*	*19.631*	*19.517*	*19.234*	*19.377*	*19.103*	*19.919*	*17.930*

*Note: * indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

If the proportions aged under 45 and 45 or over are combined then the proportion aged under 45 decreased by approaching seven per cent (compared to whole economy average of five per cent decrease) and the proportion aged 45 or over increased by almost seven per cent (compared to whole economy average of five per cent increase) over the period 2002 to 2010.

Table 3.20 shows the age profile by 2 digit SIC component in 2010 for the CBSE&P sector. The age profiles of the workforce across the 2 digit sector components are broadly comparable (the greatest difference was for the group Architects which had a lower proportion aged 19 to 24 by six percentage points compared to the Specialised construction activities group). In line with this, the Civil engineering and Architects groups tend to have a slightly lower proportion (two percentage points and five percentage points respectively) of workers aged 19 to 24 than the UK sector average. This is likely to reflect those who may be studying for three and four years degrees to enter these sectors. It is also worthy of note that the proportion of Civil engineers aged 35 to 44 was seven percentage points greater than the UK sector average.

Table 3.20: Employment by age of CBSE&P Sector by 2 Digit SIC 07 Code (2010) ('000s) (%share)

SIC07 2 Digit Code	Description	Under 16	16-18	19-24	25-34	35-44	45-59	60-64	65 +	Total	%Under 16	%16-18	%19-24	%25-34	%35-44	%45-59	%60-64	%65 +	%Total	*Weighted base*	*Unweighted base*
41	Construction of buildings	*	12	82	171	197	263	58	23	806	*	2%	10%	21%	24%	33%	7%	3%	100%	*806.234*	*5.357*
42	Civil engineering	*	*	24	60	79	95	20	*	283	*	*	8%	21%	28%	34%	7%	*	100%	*283.177*	*1.906*
43	Specialised construction activities	*	18	130	247	264	370	79	24	1,132	*	2%	11%	22%	23%	33%	7%	2%	100%	*1132.303*	*7.483*
71	Architects	*	*	24	108	118	164	36	23	476	*	*	5%	23%	25%	34%	8%	5%	100%	*475.515*	*3.184*
Total		*	30	260	586	657	892	192	71	2,697	*	1%	10%	22%	24%	33%	7%	3%	100%	2,697	18

*Note: * indicates sample size too small for reliable estimate.*
Source: Labour Force Survey 2010, Office National Statistics.

3.3.3 Ethnicity

Table 3.21 shows the ethnicity profile of the workforce across the whole economy in 2010 by nation. In 2010 just over nine in ten of the UK whole economy workforce was white (91 per cent) with nearly one in ten from Black, Asian and Minority Ethnic (BAME) groups (nine per cent). The proportion of BAME in the workforce was highest in England (11 per cent) with lower proportions across the home nations – Scotland three per cent, Wales three per cent and Northern Ireland two per cent.

Table 3.21: Ethnicity of workforce across whole economy by nation (2010)

	White	BAME	Total	White	BAME	Total	*Unweighted base*
	000s	000s	000s	%	%	%	*000s*
UK	26,151	2,686	28,837	91	9	100	*194.336*
England	21,755	2,558	24,313	89	11	100	*161.395*
Scotland	2,370	76	2,445	97	3	100	*17.019*
Wales	1,272	40	1,312	97	3	100	*8.691*
Northern Ireland	754	12	766	98	2	100	*7.231*

Source: Labour Force Survey 2010, Office National Statistics

Table 3.22 shows the ethnicity profile of the UK workforce in 2010 by sector. The CBSE&P sector workforce had one of the lowest proportions of BAME (five per cent) of all sectors compared to the average across the whole economy (nine per cent). The proportion in the CBSE&P sector was comparable to that in Manufacturing (seven per cent) and Energy production and utilities (four per cent).

Table 3.22: Ethnicity of workforce within sectors UK (2010) ('000s) (% share)

	White	BAME	Total	White	BAME	Total
	'000	'000	'000	%	%	%
Agriculture, forestry and fishing	402	*	402	100	*	100
Energy production and utilities	453	20	472	96	4	100
Manufacturing	2,769	199	2,968	93	7	100
Construction, building services engineering and planning	2,567	130	2,697	95	5	100
Wholesale and retail trade	3,722	416	4,139	90	10	100
Transportation and storage	1,266	180	1,445	88	12	100
Hospitality, tourism and sport	1,766	280	2,045	86	14	100
Information and communication technologies	660	100	760	87	13	100
Creative media and entertainment	913	73	986	93	7	100
Financial, insurance & other professional services	1,776	224	2,000	89	11	100
Real estate and facilities management	852	125	977	87	13	100
Government services	2,037	171	2,208	92	8	100
Education	2,875	210	3,085	93	7	100
Health	1,814	272	2,086	87	13	100
Care	1,526	200	1,726	88	12	100
All economy	**26,151**	**2,686**	28,837	91	9	100

*Notes: * Sample size too small for reliable estimate. Figures in the shaded column %BAME have a low base and should be treated with caution.*

Source: Labour Force Survey 2010, Office National Statistics.

The absolute number of BAME employed in the CBSE&P sector has doubled over the period 2002 to 2010 from approximately 63,000 in 2002 to 130,000 in 2010. In 2002 BAME accounted for almost three per cent of the workforce and in 2010 almost five per cent.

3.3.4 Employment by country of birth

Table 3.23 shows employment by country of birth across the whole economy in 2010. Almost nine in ten (87 per cent) of the UK workforce was born in the UK, almost one in ten (nine per cent) born in the rest of world and one in twenty (five per cent) born in the rest of Europe (EU 27). The pattern of employment by country of birth was fairly similar across the nations although Scotland (93 per cent), Wales (94 per cent) and Northern Ireland (92 per cent) had slightly higher proportions of the workforce employed that are born in the UK compared to the UK average (87 per cent) and correspondingly lower proportions born in the rest of the world. The proportion of the workforce employed born in the rest of Europe (EU 27) was broadly similar across the nations.

Table 3.23: Employment by country of birth (Whole Economy) (UK) (2010)

	UK		England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%	000s	%
UK	25,054	87	20,856	86	2,264	93	1,228	94	706	92
Rest of Europe (EU 27)	1,340	5	1,176	5	85	3	37	3	42	5
Rest of world	2,457	9	2,295	9	96	4	47	4	18	2
Total	28,851	100	24,327	100	2,446	100	1,312	100	766	100
Unweighted base	194		161		17		9		7	

Source: Labour Force Survey 2010, Office National Statistics.

Table 3.24 shows employment by country of birth for the CBSE&P sector compared to other sectors and the whole economy. The sector workforce had the fourth highest proportion of all sectors of employment of those born in the UK (91 per cent) compared to the whole economy average (87 per cent). The sector had the same proportion of employment born in the rest of Europe (EU 27) as the whole economy average (five per cent). As might be expected the corresponding proportion of employment for those born in the rest of the world in the sector (five per cent) was slightly lower than the whole economy average (nine per cent).

Table 3.24: Employment by country of birth and sector (UK) (2010)

	UK	Rest of Europe (EU 27)	Rest of world	Total	UK	Rest of Europe (EU 27)	Rest of world	Total
	'000	'000	'000	'000	%	%	%	%
Agriculture, forestry and fishing	377	21	8	406	93	5	2	100
Energy production and utilities	431	15	26	472	91	3	6	100
Manufacturing	2,567	210	193	2,969	86	7	6	100
Construction, building services engineering and planning	2,446	124	126	2,696	91	5	5	100
Wholesale and retail trade	3,644	177	318	4,140	88	4	8	100
Transportation and storage	1,213	77	158	1,448	84	5	11	100
Hospitality, tourism and sport	1,630	156	260	2,046	80	8	13	100
Information and communication technologies	640	33	88	761	84	4	12	100
Creative media and entertainment	850	51	87	987	86	5	9	100
Financial, insurance & other professional services	1,719	79	202	2,001	86	4	10	100
Real estate and facilities management	808	55	114	978	83	6	12	100
Government services	2,011	46	152	2,208	91	2	7	100
Education	2,769	106	213	3,088	90	3	7	100
Health	1,737	83	266	2,086	83	4	13	100
Care	1,490	65	174	1,729	86	4	10	100
Other sectors	722	43	71	836	86	5	9	100
All economy	25,054	1,340	2,457	28,851	87	5	9	100

Source: Labour Force Survey 2010, Office National Statistics.

Table 3.25 shows employment by country of birth by 2 digit SIC code for the CBSE&P sector in 2010. The proportions of employment by country of birth were fairly similar across the sector groups with the exception of the group Architects which had a lower proportion of the workforce born in the UK (87 per cent) compared to the sector average (91 per cent) and correspondingly higher proportion of the workforce born in the rest of the world (eight per cent) compared to the sector average (five per cent). The proportion of the workforce born in Europe (EU 27) was the same as the sector average (five per cent).

Table 3.25: Employment by country of birth CBSE&P Sector by 2 Digit SIC code (UK) (2010)

SIC07 2 Digit Code	Description	UK	Europe (EU 27)	Rest of world	Total	UK	Europe (EU 27)	Rest of world	Total
		'000	'000	'000	'000	%	%	%	%
41	Construction of buildings	724	45	37	805	90	6	5	100
42	Civil engineering	260	11	12	283	92	4	4	100
43	Specialised construction activities	1049	42	41	1132	93	4	4	100
71	Architects	414	25	36	475	87	5	8	100
Total		2,446	124	126	2,696	91	5	5	100

Source: Labour Force Survey 2010, Office National Statistics.

4 Demand for, and value of, skills

Chapter Summary

- The professional occupations group is the one forecast to experience the most growth in the UK during the forecast period, both in the CBSE&P sector and in the whole economy.
- The numbers of individuals holding Level 1 and 2 qualifications in the CBSE&P sector has generally been declining each year whilst numbers of individuals with Level 4+ qualifications has generally been increasing.
- Despite the recession firms in the sector are still training and planning training for the forthcoming year.
- The occupational groupings employers believed would be affected by the need to acquire new skills within the next year were: professional services occupations (architects, building engineers and landscape designers) and construction contracting occupations (electricians and scaffolders).
- Areas of training employers anticipate will be required in the next year are mainly health and safety or legislation/regulation related.
- In the sector 53 per cent of employers carry out training, a significant proportion of which do so without a formal training plan or budget.
- The vast majority of employers who do not train believe their employees to be fully proficient.
- In both the CBSE&P sector and the whole economy employers in Scotland are more likely to have training plans and carry out training than employers in the other nations.
- Investment in skills and training of the workforce can bring significant financial rewards and is suited to pursuing a strategy of quality and customer service over a strategy of competing on price.

4.1 Introduction

This section starts by looking at the latest data from Working Futures[10] to build a picture of the demand for certain skills. By looking at the future demand for occupations we can get an indication of the demand for the associated training/qualifications.

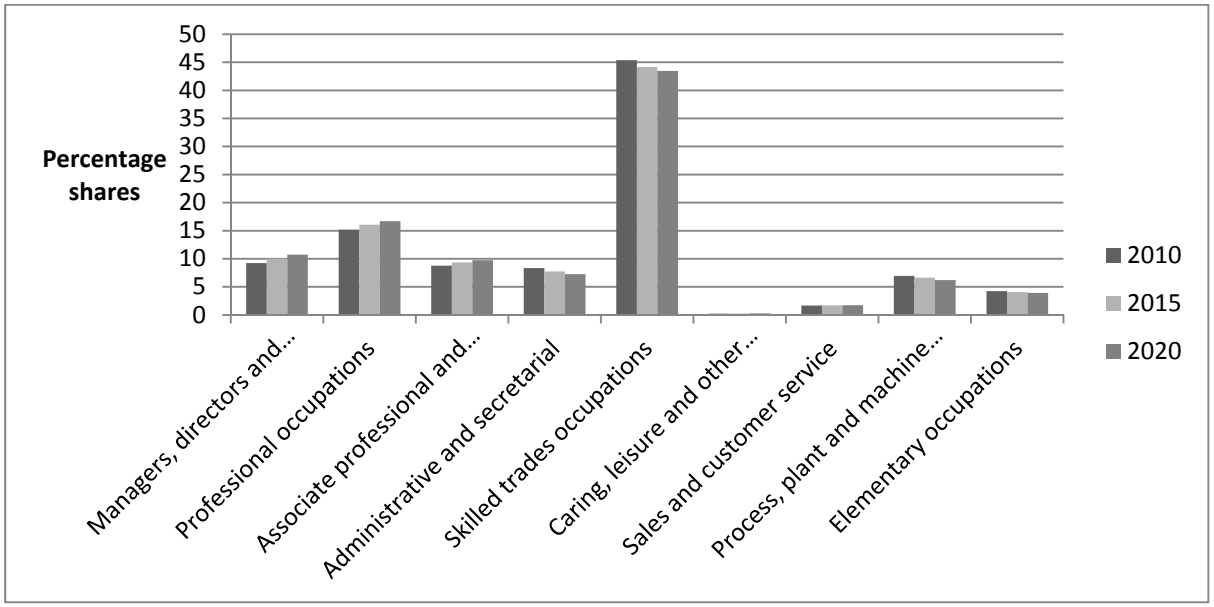
Looking at the UK economy overall the professional occupations grouping is the one to experience the highest level of growth at 869,000 over the forecast period, followed by managers, directors and senior officials which is forecast to grow by 544,000. Occupational groups to suffer significant decline are administrative and secretarial (-387,000) and skilled trades occupations (-230,000). Looking at the percentage shares across the occupational groupings these are fairly well spread with most of the groups having a percentage share of around 10 to 15 per cent (see table 2.18).

When we look at the figures specific to the CBSE&P sector for the UK (see Table 2.19) professional occupations again comes out as being the group with the highest forecast growth at 91,000 and the administrative and secretarial group suffers negative growth as in the whole economy. However when we look at the percentage shares for each occupational group there is a different pattern to that of the whole economy, with the skilled trade occupations being significantly higher than the other occupational groups at around 44 per cent (compared to between one and six per cent), as can be clearly seen in Figure 4.1.

These forecasts suggest that there will be an increase in demand for occupations which fall in the following categories; managers, directors and senior officials; professional occupations; associate professional and technical and skilled trade occupations.

[10] Working Futures 2010-2020, Wilson and Homenidou (2011)

Figure 4.1: Workplace job growth by occupation within the CBSE&P sector, percentage shares, UK



Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

In England as in the UK the professional occupations group is still the group forecast to have the largest net increase at 68,000 and the administrative and secretarial group is still the group forecast to suffer the largest net decline at -8,000. Additionally the group with the largest percentage shares is the same as the UK (skilled trade occupations), at around 45 per cent (see Table 2.20).

In Scotland (see table 2.21) the skilled trade occupations also account for the largest percentage of the workforce, albeit at a slightly lower level of around 36 per cent. In Scotland as in England the group forecast to have the largest net increase is professional occupations. The occupations experiencing minimal or negative growth are also the same as in the UK and England.

In Wales (see table 2.22) the largest groups in percentage terms and groups experiencing minimal or negative growth are the same, however the occupational group with the largest net increase is skilled trade occupations (at 13,000) not professional occupations (at 5,000).

The data for Northern Ireland (table 2.23) shows the same trends as Wales with the group forecast to experience the largest net growth as skilled trade occupations at 5,000.

The data in Table 4.1 from the Construction Skills Network (CSN)[11] provides a picture of demand for the construction industry broken down by construction occupational group.

[11] Construction Skills Network, Experian 2011. The CSN uses similar methodology to that of Working Futures, they both use econometric modelling analysing long time series data and have separate models for each region/nation and incorporate the employment flows in and out of the industry. The CSN however differs as it covers only the 26 occupational groups in

Table 4.1: UK and Regional Average Annual Recruitment Requirement 2012 - 2016

	Employment			Annual Recruitment Requirement
	2010	2012	2016	2012-2016
Senior, executive, and business process managers	128,300	126,270	138,060	1,100
Construction managers	252,280	255,340	282,190	3,380
Non-construction professional, technical, IT, and other office-based staff	311,690	307,050	324,300	3,640
Wood trades and interior fit-out	270,050	263,290	277,770	3,210
Bricklayers	65,560	66,840	63,120	2,570
Building envelope specialists	95,780	94,760	100,390	410
Painters and decorators	118,890	116,060	112,540	2,280
Plasterers and dry Liners	50,220	49,450	51,470	2,430
Roofers	41,490	39,250	40,250	1,020
Floorers	32,970	33,220	33,700	1,560
Glaziers	28,740	28,130	26,940	1,740
Specialist building operatives nec*	52,870	54,980	52,990	1,300
Scaffolders	19,550	20,180	20,300	980
Plant operatives	43,710	43,380	44,570	2,510
Plant mechanics/fitters	38,410	36,720	34,120	1,080
Steel erectors/structural	30,120	29,480	29,630	880
Labourers nec*	92,980	86,170	89,720	5,230
Electrical trades and installation	201,810	195,110	209,290	610
Plumbing and HVAC Trades	175,130	175,490	177,400	560
Logistics	35,620	36,280	39,280	2,970
Civil engineering operatives nec*	53,880	53,550	55,110	1,690
Non–construction operatives	37,870	36,760	36,350	-
Civil engineers	50,550	46,900	51,630	1,280
Other construction professionals and technical staff	183,260	177,420	194,160	1,680
Architects	39,330	37,860	39,850	950
Surveyors	67,500	66,980	73,000	1,180
Total (SIC 45)	**2,177,920**	**2,147,760**	**2,239,490**	**41,150**
Total (SIC 45 & 74.2)	**2,518,560**	**2,476,920**	**2,598,130**	**46,240**

Source: Construction Skills Network, Experian 2011

Occupations with the largest recruitment requirements are labourers (not elsewhere classified) at 5,230, non-construction professional technical and IT and other office based staff (3,640), construction managers (3,380) and wood trades and interior fit out (3,210). Non- construction operatives is showing a zero recruitment requirement overall and the lowest figure is for building envelope specialists which has an annual average recruitment requirement of just 410 across the UK.

The majority of trades are forecast to have increased in the levels required for 2016, the top three are non-construction professional technical and IT and other office based staff, wood trades and interior fit-out and construction managers.

ConstructionSkills footprint whereas Working Futures covers the whole economy and occupational groups are much broader. Further methodological information is contained in the methodology section.

In conclusion the professional occupations group is the one forecast to experience the most growth in the UK during the forecast period, both in the CBSE&P sector and the whole economy.

The occupational grouping with by far the largest share of employment in the sector is the skilled trades occupations, it is also one of the groups forecast to have the most growth at 27 per cent of the overall forecast net growth.

The rate of change for each occupational group throughout the forecast period is generally slow and homogenous across the nations, with no steep increases or decreases in employment growth.

4.2 Nature of Skills Used

In the CBSE&P sector there are just over 2.8 million individuals with qualifications versus 189,000 with no qualifications, interestingly the CBSE&P sector ranks fourth in terms of the number of individuals with qualifications across all sectors. The number of individuals with no qualifications in the CBSE&P sector is somewhat higher than the all sector average of around 123,000.

In percentage terms the CBSE&P sector has average levels of individuals with no qualifications at seven per cent (as shown in Table 4.2). The sector also has a significantly below average percentage of individuals with Level 4+ qualifications (27 per cent versus an average of 37 per cent).

Table 4.2: Qualification profile of workforces with sectors, UK (2010)

	No qualifications	Level 1	Level 2	Level 3	Level 4 +	Total	Unweighted base
	%	%	%	%	%	'000s	'000s
Agriculture, forestry and fishing	18	21	22	15	24	406	2.978
Energy production and utilities	6	16	22	22	33	473	3.244
Manufacturing	9	19	21	22	29	2,969	20.404
Construction, building services, engineering and planning	7	16	23	28	27	2,697	17.927
Wholesale and retail trade	11	22	26	22	19	4,140	27.582
Transportation and storage	11	26	29	19	16	1,447	9.732
Hospitality, tourism and sport	10	20	27	22	20	2,046	13.183
Information and communication technologies	2	10	15	18	55	761	4.874
Creative media and entertainment	3	10	14	14	59	987	6.193
Financial, insurance & other professional services	2	12	18	17	52	2,001	12.805
Real estate and facilities management	14	23	22	17	23	978	6.565
Government services	2	12	19	20	46	2,209	15.100
Education	3	9	12	13	63	3,088	21.544
Health	3	10	14	12	61	2,087	14.749
Care	5	12	23	24	36	1,729	12.006
All economy	7	16	21	20	37	28,854	194.437

Source: Labour Force Survey 2010 (ONS)

Table 4.3 gives a brief summary of the skill levels required by broad occupational group in the CBSE&P sector.

Table 4.3 Skill levels by occupation

Broad Occupational Group	Sector Occupations	Predominate Level of skil required	Predominate type of skill required	Minimum qualification level typically required
Managers, directors and senior officials	Senior, executive and business process managers, site supervisors, construction managers	Higher skills	Transferable strategic, management, leadership and communication skills, technical skills	Level 3/4
Professional occupations	architects, building engineers, landscape designers, building surveyors, quantity surveyors, civil engineers, mechanical engineers, technicians	Higher and intermediate skills, employability skills	Job-specific technical skills	Level 4/5
Associate professional and technical	Other construction professionals and technical staff, non-construction professional, technical, IT and other office based staff	Basic skills, intermediate skills, employability skills	Job-specific technical skills	Level 3
Administrative and secretarial	non-construction office based staff	Basic skills, employability skills	Job-specific technical skills, customer service skills	Level 2
Skilled trades occupations	Skilled trades e.g. bricklayers, painters and decorators, plasterers and dry liners, roofers, glaziers, building envelope specialists, wood trades and interior fit-out, specialist building operatives (nec), scaffolders, steel erectors/structural, electrical trades and installation, plumbing and HVAC trades, logistics, non-construction operatives	Basic skills, intermediate skills, employability skills	Job-specific technical skills	Level 2
Personal service occupations	n/a	n/a	n/a	n/a
Sales and customer service occupations	n/a	n/a	n/a	n/a
Process, plant and machine operatives	Plant operatives, plant mechanics, fitters	Basic skills, intermediate skills, employability skills	Job-specific technical skills	Level 2
Elementary Occupations	Labourers, civil engineering operatives	Employability skills and basic skills	Transferable communication skills	Health and Safety training

Source: ConstructionSkills

4.2.1 Nations Comparison

In the CBSE&P sector England has by far the highest number of individuals with Level 1 qualifications (530,000); the numbers for each level qualification generally follow the same pattern across the nations with England having the highest numbers overall followed by Scotland, Wales and then Northern Ireland (as shown in Table 4.4).

When looking at qualification levels within the CBSE&P sector Level 3 and Level 4+ qualifications account for the highest percentage of qualifications in each nation. Given that Level 2 qualifications are the construction industries adopted competence standard it is surprising to note that in England the percentage of individuals holding Level 2 qualifications is the same as those holding Level 1 qualifications.

Scotland has the highest percentage of Level 3 qualifications, which is not surprising considering this is the level that the Scottish construction industry has traditionally set and recognises as their standard of competence, unlike the rest of the UK where as previously mentioned Level 2 is the standard.

Table 4.4: Qualification levels within the CBSE&P sector by nation (2010)

	UK	England	Scotland	Wales	Northern Ireland
	%	%	%	%	%
Level 4 +	25	26	33	26	19
Level 3	26	27	31	28	29
Level 2	21	23	20	26	28
Level 1 and below	28	23	16	20	24
Total	100	100	100	100	100
Weighted base (000s)	2,886	2,269	244	113	71
Unweighted base (000s)	17.927	14.840	1.703	0.719	0.665

Source: Labour Force Survey 2010 (ONS)

4.2.2 Qualification Levels from 2002 to 2010

Data from the Labour Force Survey 2010 shows that numbers of individuals holding Level 1 qualifications had been steadily increasing from 2004 to 2007 (see Table 4.5), since then it has been declining gradually.

In percentage terms there has been a decrease of seven per cent between 2002 and 2010 which may be a reflection of the industry increasingly seeing individuals with Level 2 qualifications as being work ready and competent whilst Level 1 qualifications are regarded as being entry level qualifications only.

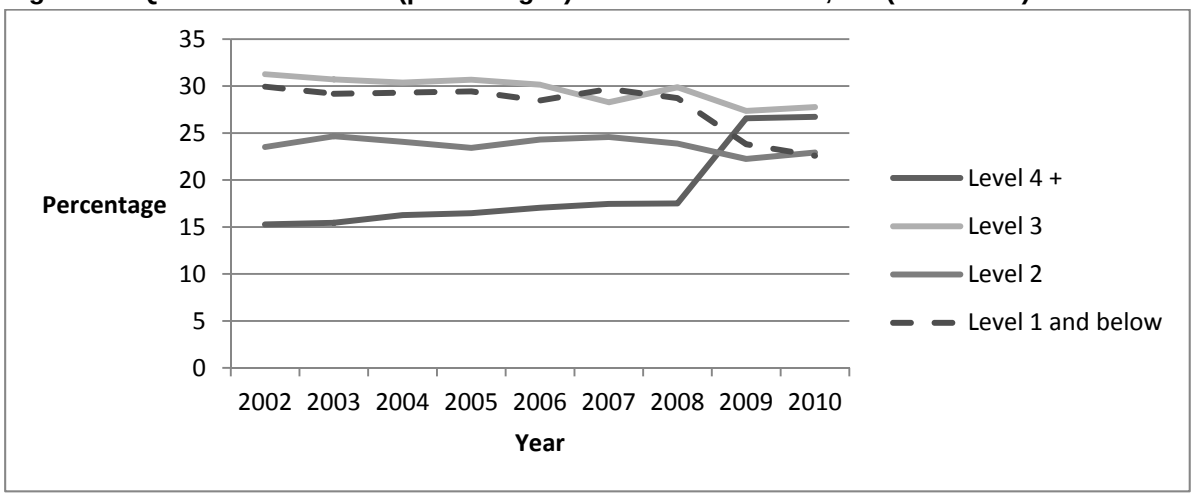
Table 4.5: Qualification levels within the CBSE&P sector, UK (2002-2010)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	%	%	%	%	%	%	%	%	%
Level 4 +	15	15	16	16	17	17	18	27	27
Level 3	31	31	30	31	30	28	30	27	28
Level 2	24	25	24	23	24	25	24	22	23
Level 1 and below	30	29	29	29	28	30	29	24	23
Total	100	100	100	100	100	100	100	100	100
Weighted base	2,223	2,332	2,435	2,500	2,560	2,615	2,639	2,875	2,697
Unweighted base	19.566	19.581	14.674	18.045	19.233	19.377	19.103	19.918	17.927

Source: Labour Force Survey 2010 (ONS)

The percentage of individuals with Level 2 qualifications follows a similar pattern but remained stable until 2007, when it goes into a gradual decline.

Figure 4.2 Qualification Levels (percentages) for CBSE&P Sector, UK (2002-2010)



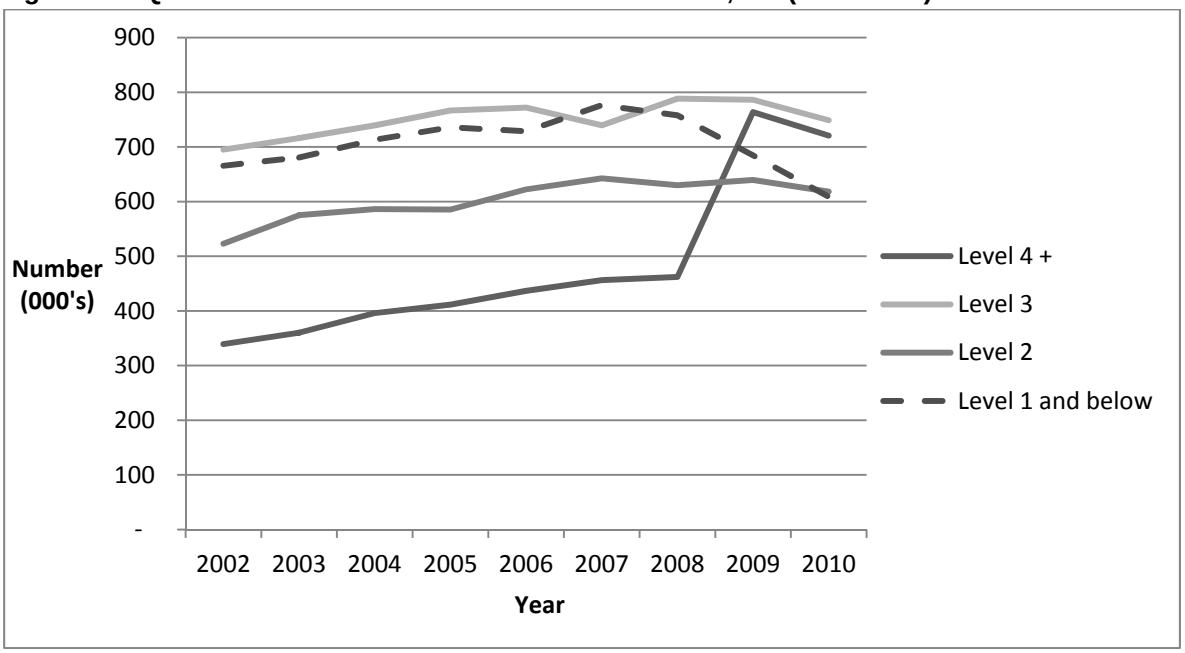
Source: Labour Force Survey 2010 (ONS)

The majority of qualifications in the CBSE&P sector are at Level 1 (28 per cent), followed by Level 3 (26 per cent), Level 4+ (25 per cent) and lastly Level 2 (21 per cent). Percentages of Level 2 qualifications in the CBSE&P sector has remained fairly static between 2002 and 2010 fluctuating between 22 per cent and 25 per cent as shown in Figure 4.2.

Numbers of individuals with Level 1 qualifications has declined sharply since its peak in 2007, and there is a dramatically steep increase in the numbers of individuals holding qualifications of Level 4 and above reflecting trends indicated in other research of increases in management and supervisory training within the industry as is shown in figure 4.3 (such as ConstructionSkills own Skills and Training in the Construction Industry and Training in the Built Environment[12] reports).

[12] Training and the Built Environment, ConstructionSkills, 2011.

Figure 4.3: Qualification levels within the CBSE&P Sector, UK (2002-2010)



Source: Labour Force Survey 2010 (ONS)

Amongst the 15 sectors the CBSE&P workforce has the fourth highest share of individuals with no qualifications, third highest share of individuals with Level 1, 2 and 3 qualifications (numbers are double that of the all sector mean), and seventh in terms of individuals with Level 4 plus qualifications. Figures 4.2 and 4.3 demonstrate the trend over time for each qualification level.

ConstructionSkills research[13] found that for NVQ/SVQ training Level 2 was the most common with 47 per cent of employers offering this level of training followed by 23 per cent who mainly provided Level 3 training and only 15 per cent mainly providing Level 4 training, confirming that Level 2 is the sectors industry standard. The study also found that larger organisations (those with 100 plus employees) predominantly provide NVQ/SVQ training at higher levels, this may be because they often have a larger training budget and there may be more opportunities for progression and development than in smaller organisations.

[13] Training and Skills in the Construction Sector, ConstructionSkills, 2011. 1207 quantitative telephone interviews comprising 157 sole traders and 1050 employers within the construction industry, results are weighted to be representative of the industries business profile.

Recent research undertaken by the CBI[14] found that forecasts for UK employment showed that demand to fill jobs in more highly skilled occupations is growing. Of the 13.5 million jobs that will need to be filled by 2017, over half will be for managers, professionals and associate professionals and technical occupations. The report states that the UK will need to develop its technical and managerial capabilities at intermediate and higher levels to meet this demand.

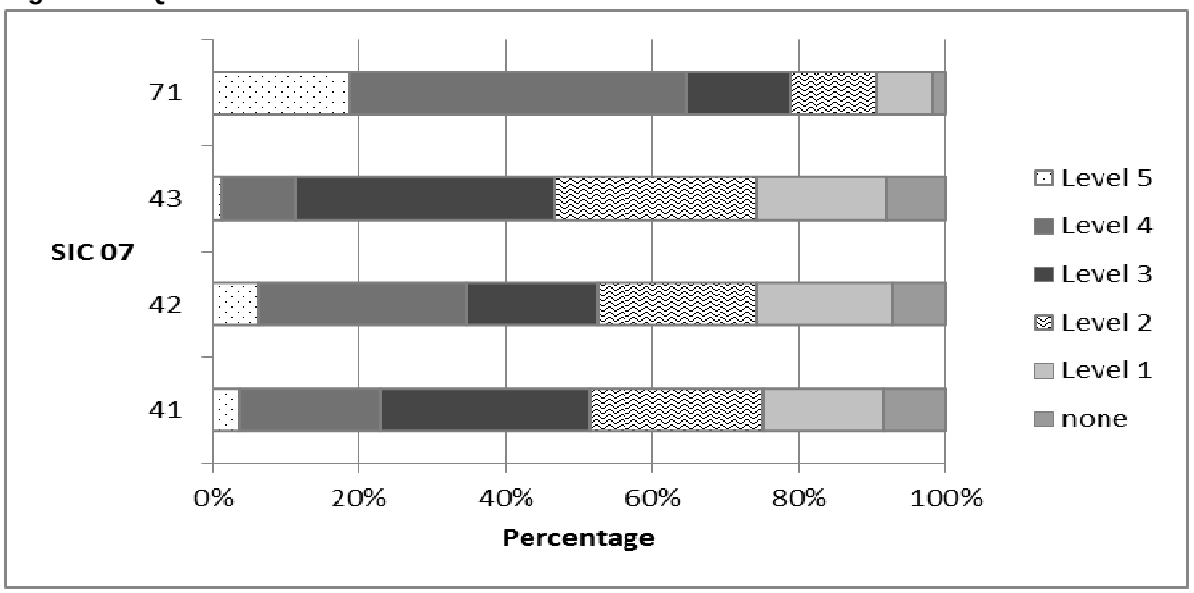
4.2.3 Qualification Levels by sub-sector

Within the CBSE&P sector it is not surprising that the Architectural and Engineering Activities sector (SIC 71), has the highest numbers of individuals with Level 4 plus qualifications by some considerable margin. ConstructionSkills research[15] also found a marked difference between the construction contracting sector and the professional services sector with only 13 per cent of the former providing Level 4+ training compared to 40 per cent of the latter, which reflects the requirement for those in the professional sector to have professional qualifications. Interestingly the sector with the lowest levels of Level 4 plus qualifications is the civil engineering sector (SIC 42).

Overall the sector with the highest numbers of qualifications is specialised construction services (SIC 43); which has 1041,000 individuals with qualifications, however with only 92 per cent of its workforce with qualifications the sector does not have the highest percentage of qualified individuals. In contrast the architectural and engineering sector (SIC 71) has 98 per cent of its 476,000 workforce holding qualifications.

[14] Building for Growth: business priorities for education and skills, Education and skills survey 2011, CBI. Survey of 566 employers covering 2.2 million employees. The sample covered organisations from all sectors of the economy including public and private sectors and organisations of all sizes, results have been weighted using data from the ONS to ensure they accurately reflect practices in all sectors of the economy.
[15] Training and Skills in the Construction Sector, ConstructionSkills, 2011

Figure 4.4: Qualification levels within the CBSE&P Sector



Source: Labour Force Survey 2010 (ONS)
SIC 41: Construction of Buildings; SIC 42: Civil Engineering; SIC 43: Specialised Construction Activities
SIC 71: Architectural and Engineering Activities

In summary, the CBSE&P sector ranks fourth in terms of the number of individuals with qualifications across all sectors. The recession seems to have decreased the numbers of individuals with level 1 and 2 qualifications and significantly increased numbers holding Level 4 plus qualifications. This is possibly a reflection of reduced training budgets as firms in the sector struggle for survival as well as the reduced funding for lower level qualifications and the use of management and supervisory level qualifications (Level 3 upwards) as a tool to help businesses survive the recession. ConstructionSkills also has anecdotal evidence that suggests that employers are attempting to retain skilled workers for as long as possible, and that many employers are operating with reduced working hours in an effort to retain workers and their skills.

4.3 Value of Skills

Using data from the 2011 UK Commission's Employer Skills Survey on training plans and training budgets it is possible to get an indication of how much employers value skills and the extent to which they invest in their workforce.

Table 4.6 shows the number of employers in who have training plans in both the CBSE&P sector and all economy. The percentages of employers with training plans across the nations is similar in profile for the CBSE&P sector as that for all of the economy. In percentage terms Scotland has the greatest proportion of firms with training plans both in the sector and across the whole economy.

The CBSE&P sector has the second lowest percentage of firms with a training plan out of all the sectors (at 27 per cent), half the all sector average of 42 per cent.

Table 4.6: Employers with a training plan

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Construction, Building Services Engineering & Planning	84,115	27	67,305	26	9,885	46	3,996	30	2,930	27
All economy	863,494	38	721,499	37	79,173	45	37,719	38	25,099	37
Weighted base	2,299,921		1,960,298		175,115		98,952		65,558	
Unweighted base	87,572		75,053		2,503		6,012		4,004	

Base: All employers
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Table 4.7 shows that the percentages of firms with a training budget in the CBSE&P sector are consistently and significantly lower than the percentages for the whole economy, except in Scotland where there is only a three percentage point difference. Scotland again has the highest percentages of firms with training budgets and indeed at a level twice that of the rest of the nations.

With only 19 per cent of employers in the CBSE&P sector having a training budget this is also considerably less than the all sector average of 29 per cent. The sector has one of the lowest proportions of firms with a training budget e.g. in the education sector 67 per cent of firms have a training budget. This would imply that the employers in the CBSE&P sector do not consider training as important an investment as employers in other sectors do.

Table 4.7: Employers with a training budget

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Construction, Building Services Engineering & Planning	59,489	19	49,098	19	6,428	30	2,230	17	1,733	16
All economy	657,040	29	554,765	28	57,270	33	25,624	26	19,380	30
Weighted base	2,299,921		1,960,298		175,115		98,952		65,558	
Unweighted base	87,572		75,053		2,503		6,012		4,004	

Base: All employers
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

The CBI survey[16] (previously mentioned) found that 41 per cent of firms surveyed (in the whole economy) planned to increase their investment in training and over half of the employers were involved in apprenticeships with 17 per cent planning to become involved with apprenticeships in the next few years, this is particularly important as apprenticeships are one of the main qualification routes in the sector.

4.3.1 Employers providing training

This section examines the amount of employers providing training which can be used as a further gauge of the importance employers give to training.

[16] Building for Growth: business priorities for education and skills, Education and skills survey 2011, CBI

Table 4.8: Employers providing training by sector

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	58,869	53	42,577	54	†7,737	†58	3,536	34	5,019	71
Energy production and utilities	8,743	69	6,858	69	1,040	81	554	67	291	54
Manufacturing	73,972	57	61,935	55	6,629	71	3,464	64	1,944	51
Construction	163,641	53	137,473	53	13,506	63	7,193	55	5,469	51
Wholesale and retail trade	261,948	56	218,681	55	23,692	67	11,347	54	8,228	58
Transportation and storage	55,004	45	46,106	43	5,633	70	2,103	50	1,161	52
Accommodation, food and tourism activities	134,314	61	108,618	60	15,665	71	6,570	58	3,461	59
Information and communication	39,090	54	34,418	52	†2,974	†83	1,215	62	483	44
Creative media and entertainment	74,069	52	63,945	51	†5,976	†54	2,690	57	1,457	71
Financial, insurance & other professional services	114,074	67	101,640	66	5,354	64	4,605	80	2,474	73
Real estate and facilities management	95,068	57	85,826	57	†6,652	†55	1,340	44	1,249	67
Government	41,608	76	32,980	74	4,715	85	2,343	87	1,571	77
Education	55,629	86	45,309	85	4,348	97	2,941	92	3,031	92
Health	44,797	86	38,133	85	3,208	99	2,216	79	1,239	84
Care	73,669	84	60,516	84	6,798	81	3,562	81	2,793	86
All economy	1,361,250	59	1,141,560	58	119,847	68	58,171	59	41,668	64
Weighted base	2,299,921		1,960,298		175,115		98,952		65,558	
Unweighted base	87,572		75,053		2,503		6,012		4,004	

Base: All establishments. Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012).
† Treat figures with caution due to small base size of 50-99 establishments in Scotland

Table 4.8 shows that there are just over 1.3m employers (whole economy) and 163,641 employers in the CBSE&P sector who provide training in the UK. Just over half of the CBSE&P sector employers provide training (53 per cent), compared to the sector average of 59 per cent. This percentage is significantly higher than the percentages of firms in the sector who have a training plan or a training budget, which may mean that there is a significant proportion of employers in the sector who do provide training but it is not formally planned (either in financial terms or in the form of a training plan).

Scotland once again has the highest percentage of firms in the sector who provide training, at 63 per cent and Northern Ireland has the lowest at 51 per cent – although the range between them is only 12 percentage points. Interestingly the percentage of firms in the whole economy in Northern Ireland who provide training is one of the highest percentages at 64 per cent, so it appears that the country's CBSE&P sector employers invest less in training than employers in the economy as a whole.

Table 4.9 shows that 45 per cent of employers in the CBSE&P sector (compared to 52 per cent of employers in the whole economy) arrange training for all categories of staff employed and 55 per cent arrange training for some categories of staff employed.

The occupational group which the largest numbers of employers provide training to is managers, directors and senior officials at 90,196 accounting for 55 per cent of the training given by all establishments who provide training in the construction sector.

Table 4.9: Employers providing training to employees by occupational group

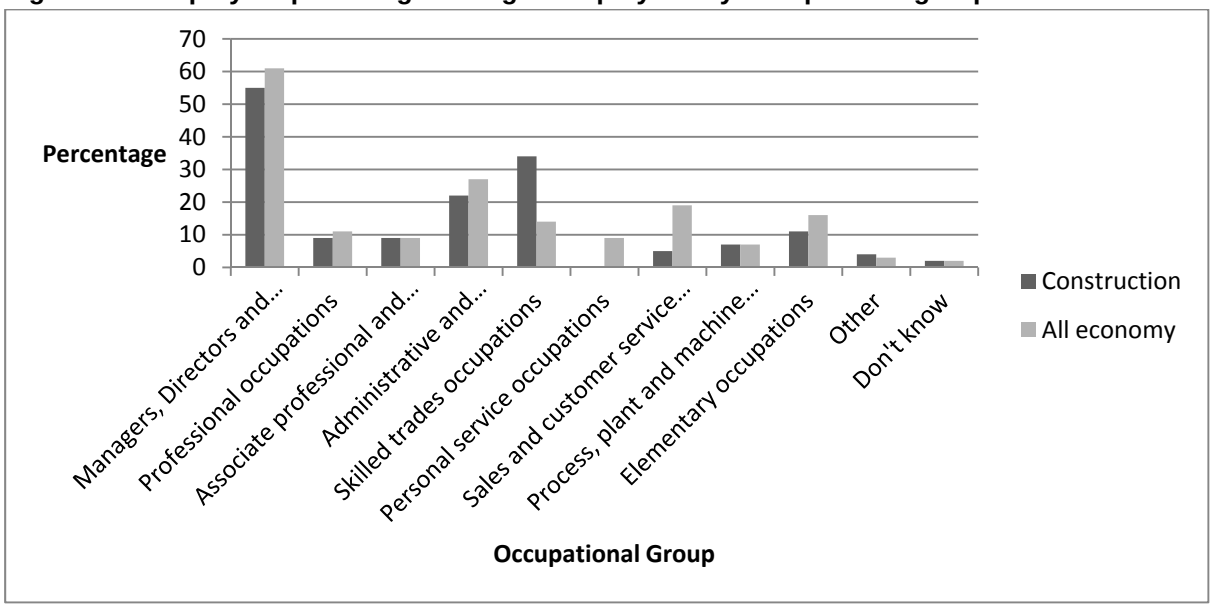
	Construction		All economy	
	Number	%	Number	%
Managers, Directors and senior officials occupations	90,196	55	825,928	61
Professional occupations	14,619	9	152,106	11
Associate professional and technical occupations	14,484	9	124,610	9
Administrative and secretarial occupations	36,088	22	372,218	27
Skilled trades occupations	55,962	34	192,480	14
Personal service occupations	*	*	129,265	9
Sales and customer service occupations	8,426	5	261,082	19
Process, plant and machine operatives	11,204	7	96,592	7
Elementary occupations	17,682	11	217,981	16
Other	6,093	4	35,410	3
Don't know	2,966	2	20,638	2
Arrange training for all categories of staff employed	74,399	45	714,095	52
Arrange training for some categories of staff employed	89,242	55	647,154	48
Weighted base	163,641		1,361,249	
Unweighted base	6,250		66,916	

*Base: All establishments providing training * suppressed due to base size <25 ** denotes a figure greater than 0% but less than 0.5%*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Figure 4.5 shows the percentages of employers which provide training for each occupational group, it shows that the group to receive the second largest proportion of training in the CBSE&P sector is skilled trade occupations at 34 per cent, however in the economy as a whole it is the administrative and secretarial occupations at 27 per cent.

The occupational groups with the third largest percentages are administrative and secretarial 22 per cent (in the CBSE&P sector) and sales and customer service occupations at 19 per cent (in the whole economy).

Figure 4.5: Employers providing training to employees by occupational group



Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

ConstructionSkills research[17] found that all employers surveyed expected someone in their business would need to acquire new skills or knowledge in the next year in response to external stimulus. Of the employers surveyed 45 per cent expected that new regulatory or legislative requirements would have an impact upon their skills and knowledge needs for the coming year, other factors cited by employers (in order of number of mentions) were:

- the introduction of new working practices (eco/energy saving etc.);
- the introduction of new technologies or equipment;
- the development of new products and services;
- increased competitive pressure;
- new eco or energy-saving design/build methods;
- environmental regulations.

Tables 4.10 and 4.11 show the occupations employers felt would be affected by the need to acquire new skills or knowledge in the next year and the skills that they felt would need improving or updating next year.

The tables show that the professional service occupation groups are those that are perceived to be likely to be affected most by needs for upskilling, namely architects, building engineers and landscape designers. Within the construction contracting sector, electricians and scaffolders are among the occupations most cited.

[17] ConstructionSkills, Training and Skills in the Construction Sector, 2011. Base 157 sole traders, 1050 employers totalling 1207 construction industry employers.

The type of skills that employers mentioned most frequently as needing improving or updating in the next year was health and safety/first aid; which was mentioned by 17 per cent of employers, followed by technical or trade-specific skills at six per cent. These were also the top two skill groups identified by the sole traders at 10 per cent each.

The survey results showed a clear difference between the skills groups prioritised by construction contracting employers and professional services employers with the former identifying health and safety / first aid as the top priority (at 20 per cent) and the latter identifying legislation / regulations as the top priority (15 per cent) and only four per cent prioritising health and safety / first aid.

Table 4.10: Top ten construction contracting occupation groups affected by need to acquire new skills or knowledge in the next year

	Number employing the occupation group	Number anticipating new skills/knowledge needed by occupation group	Proportion of employers of this occupation group anticipating new skills/knowledge required
	n	n	%
Scaffolders	16	7	44
Electricians	21	9	43
Plasterers	48	17	35
Painters/ decorators	53	17	32
Plumbers	29	8	28
Managers/ directors	375	98	26
Staff with no one main role or who multi task	136	36	26
Roofers	38	10	26
Floorers	9	2	22
Carpenters/ joiners	221	42	19

Base: All construction contracting employers (weighted – 854; unweighted - 83318)
Source: ConstructionSkills, Training and Skills in the Construction Sector, 2011

[18] Due to the construction industry comprising of a large number of sole traders and a small number of large employers the survey has been weighted to over represent large employers and under represent sole traders.

Table 4.11: Top ten professional services occupation groups affected by need to acquire new skills or knowledge in the next year

	Number employing the occupation group	Number anticipating new skills/knowledge needed by occupation group	Proportion of employers of this occupation group anticipating new skills/knowledge required
	n	n	%
Architects	88	63	72
Building service engineers	10	6	60
Building surveyors	8	4	50
Landscape designers	4	2	50
Quantity surveyors	7	3	43
Civil engineers	15	6	40
Mechanical engineers	10	4	40
Technicians	22	7	32
Other engineers	29	9	31
Town planners	7	2	29

Base: All professional services employers (weighted – 196; unweighted - 217[19])
Source: ConstructionSkills, Training and Skills in the Construction Sector, 2011

Levels of training in the CBSE&P sector have remained static or been in decline since 2009, some of this may be attributed to the prolonged down turn (and resultant cuts to training budgets), reduction in industry training grants and the reduction in funding from the government, via schemes such as Train to Gain.

The training data seems to indicate that employers do value skills and training and are willing to invest, echoing the findings of the CBI[20] survey which found that employers recognise the value of skills and invest some £39bn a year in training their staff (whole economy). This amounted to 109 million days of training covering 12.8 million workers in 2009. The survey also found strong support for apprenticeship programmes with 55 per cent of respondents currently providing apprenticeship training. The 2010 employer and skills survey found 99 per cent of firms saw skills as important or very important to achieving their strategic objectives.

The report also found that 44 per cent of employers wanted to see measures to support larger firms who are willing to train more apprentices than they need to allow smaller firms in their sector/supply-chain to benefit from apprenticeship training. This included 53 per cent of firms in construction where the industry is dominated by small firms, often working on short term contracts and without the capacity to invest in the long-term training of an apprentice.

[19] Due to the construction industry comprising of a large number of sole traders and a small number of large employers the survey has been weighted to over represent large employers and under represent sole traders.
[20] Building for Growth: business priorities for education and skills, Education and skills survey 2011, CBI

4.3.2 Provision of Training

Table 4.12 shows that almost 14.4 million of the employees in the whole economy of the UK have received training, this equates to 53 per cent of all employees.

In the UK CBSE&P sector 48 per cent of the sectors employees have received training, percentages across the nations are also around this level. This indicates that the numbers of employees receiving training in the sector is below average.

Table 4.12: Employees receiving training by sector

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	198,736	43	152,352	43	†25,724	†47	8,993	29	11,667	51
Energy production and utilities	167,507	50	120,687	49	32,976	55	11,072	66	2,772	38
Manufacturing	1,146,654	45	934,516	44	93,562	48	74,719	54	43,857	52
Construction	1,072,552	48	884,923	48	116,140	47	39,666	44	31,826	46
Wholesale and retail trade	2,340,353	50	1,960,109	49	201,879	55	109,603	55	68,761	48
Transportation and storage	538,494	41	448,580	39	49,954	44	22,489	58	17,468	63
Accommodation, food and tourism activities	1,221,736	53	1,017,791	53	124,328	55	48,807	49	30,809	50
Information and communication	233,240	38	205,944	37	†15,377	†51	5,255	28	6,663	65
Creative media and entertainment	524,081	48	451,335	47	†30,017	†43	24,215	69	18,513	69
Financial, insurance & other professional services	1,109,888	54	949,712	52	101,444	73	32,505	60	26,224	69
Real estate and facilities management	560,354	47	492,799	47	†36,284	†49	19,985	60	11,286	50
Government	1,004,866	56	835,514	58	82,550	47	49,901	53	36,901	59
Education	1,598,280	63	1,354,826	63	116,696	62	84,527	72	42,231	58
Health	1,300,684	65	1,032,851	64	187,638	81	58,505	49	21,690	52
Care	969,487	64	780,108	64	89,130	63	52,831	84	47,414	64
All economy	14,476,138	53	12,050,111	52	1,337,833	56	661,045	56	427,137	54
Weighted base	27,547,123		23,198,475		2,381,601		1,182,314		784,732	
Unweighted base	2,816,693		2,345,213		201,868		178,922		90,690	

Source: UK Commission's ESS 2011 (Davies et al, 2012). Base: All employment.
† Treat figures with caution due to small base size of 50-99 establishments in Scotland

Table 4.13 shows that the occupational group with the highest number of employees receiving training is skilled trades occupations at 310,536; although this group is the largest overall it is not the one with the highest percentage of employees receiving training.

The occupational group with the highest proportion of employees receiving training is process, plant and machinery operatives at 60 per cent, followed by professional occupations at 58 per cent and then skilled trades' occupations at 55 per cent.

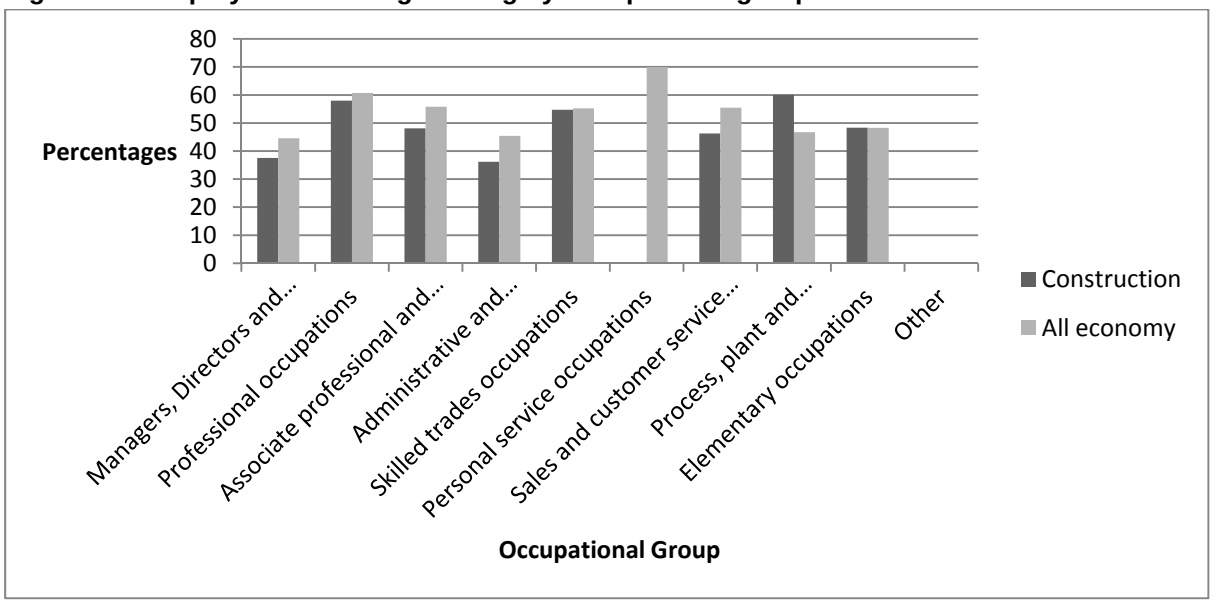
Table 4.13: Employees receiving training by occupational group

	Construction		All economy	
	Number	%	Number	%
Managers, Directors and senior officials occupations	226,342	38	2,413,145	45
Professional occupations	127,395	58	1,904,780	61
Associate professional and technical occupations	76,132	48	1,022,510	56
Administrative and secretarial occupations	99,336	36	1,607,984	45
Skilled trades occupations	310,536	55	1,041,373	55
Personal service occupations	*	*	1,606,254	70
Sales and customer service occupations	33,201	46	1,937,670	55
Process, plant and machine operatives	100,716	60	902,782	47
Elementary occupations	81,052	48	1,938,793	48
Other	16,368	n/a	100,845	n/a
All occupations	1,072,552		14,476,137	
Weighted base	1,072,552		14,476,137	
Unweighted base	73,960		1,517,802	

Base: All employees receiving training
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)
**Suppressed due to base size <25*

As can be seen in figure 4.6 the profile of employees receiving training across the occupations in the sector is similar to that for the whole economy.

Figure 4.6: Employees receiving training by occupational group



Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Looking at training received in the last four weeks the levels for all industries have fluctuated but mostly within a narrow range. The CBSE&P sector has been gradually increasing from 2002 to a peak of 250,000 in 2009. The mean value for the sector is 234,000, which is around the all sector average. Over time the amount of training in the sector has hardly altered (ranging from 218,000 to 250,000) but is consistently below the all economy average. In percentage terms there has been very little change and again the percentage of employees receiving training in the sector is lower than most other sectors as shown in Table 4.14.

Table 4.14: Employees receiving training in last 4 weeks, 2002-2010 (UK)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	%	%	%	%	%	%	%	%	%
Agriculture, forestry and fishing	7	7	6	6	6	6	6	6	6
Energy production and utilities	15	14	13	13	13	13	12	11	12
Manufacturing	10	9	9	10	9	9	9	9	9
Construction, building services engineering and planning	10	9	10	9	9	9	9	9	8
Wholesale and retail trade	11	10	10	10	10	10	9	8	8
Transportation and storage	10	10	9	9	8	8	8	7	7
Hospitality, tourism and sport	13	12	12	11	11	10	10	10	11
Information and communication technologies	13	12	12	11	11	10	10	10	10
Creative media and entertainment	13	12	12	12	11	11	10	9	8
Financial, insurance & other professional services	18	17	17	16	15	15	15	14	15
Real estate and facilities management	14	13	14	12	13	12	12	7	8
Government services	20	20	20	20	19	18	19	19	17
Education	22	21	21	21	20	20	20	20	18
Health	24	25	25	25	24	23	22	24	24
Care	24	25	25	25	24	23	22	21	20
All economy	15	14	14	14	14	13	13	13	13
Weighted base (000s)	4,095	3,987	4,074	4,061	3,949	3,863	3,834	3,685	3,642
Unweighted base (000s)	*35.781*	*33.324*	*32.626*	*31.674*	*29.781*	*28.888*	*27.829*	*25.468*	*24.012*

Source: Labour Force Survey 2010, ONS

The level of training within the sector in real terms is generally close to the all economy average, however in percentage terms the sector does not perform well compared to the other sectors but it does remain consistent (as shown in Table 4.15).

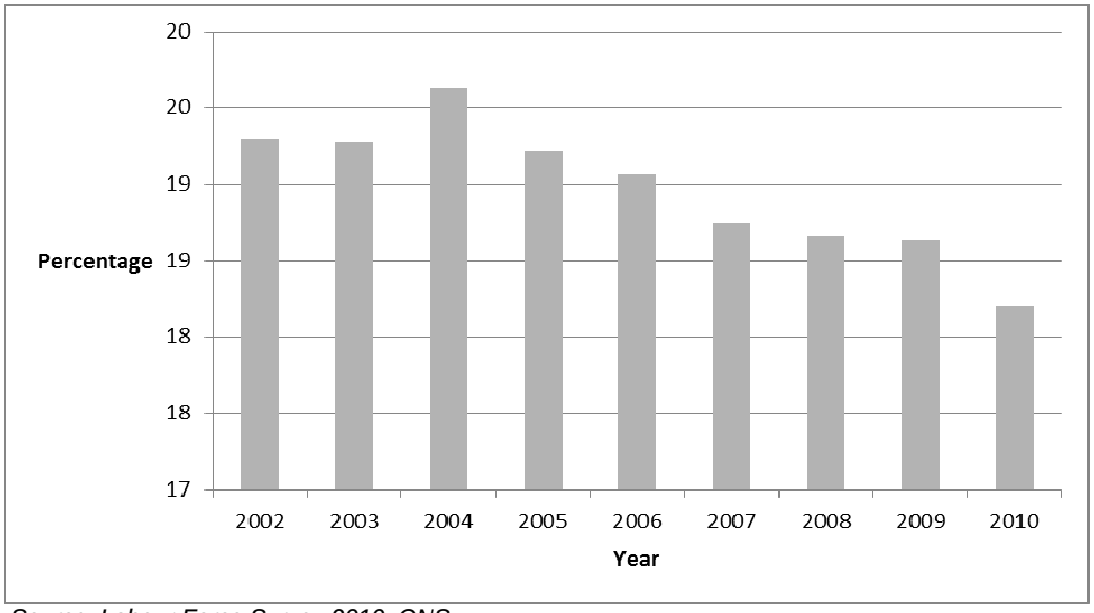
Table 4.15: Employees receiving training in last 13 weeks, 2002-2010 (UK)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	%	%	%	%	%	%	%	%	%
Agriculture, forestry and fishing	15	13	14	13	13	12	13	13	13
Energy production and utilities	33	31	30	28	28	28	26	25	27
Manufacturing	21	20	19	20	19	20	19	18	18
Construction, building services engineering and planning	19	19	20	19	19	19	19	19	18
Wholesale and retail trade	20	20	20	20	18	18	18	16	16
Transportation and storage	21	21	20	19	19	18	18	17	18
Hospitality, tourism and sport	24	22	22	21	21	20	19	19	19
Information and communication technologies	27	25	24	23	23	22	21	21	20
Creative media and entertainment	24	24	23	23	23	21	21	18	17
Financial, insurance & other professional services	35	33	32	33	30	30	29	29	29
Real estate and facilities management	27	26	27	26	26	25	24	15	16
Government services	40	41	40	39	38	37	36	37	35
Education	44	42	42	42	40	39	40	39	38
Health	45	46	46	47	46	44	44	47	46
Care	45	46	46	47	46	44	44	41	40
All economy	28	28	28	28	27	26	26	26	26
Weighted base (000s)	7,952	7,873	7,917	8,037	7,883	7,681	7,669	7,382	7,359
Unweighted base (000s)	*69.767*	*65.973*	*63.658*	*63.118*	*59.87*	*57.81*	*56.008*	*51.497*	*48.93*

Source: Labour Force Survey 2010, ONS

These findings are corroborated by the findings of ConstructionSkills research[21] which found that during the last year 41 per cent of employer establishments surveyed had arranged some sort of training for at least one member of staff and that on average employers had provided training to at least half of their workers (54 per cent) – which has increased from 39 per cent in 2009. The study also found that the proportions of employees provided with training were closely balanced (16 per cent saying 'decreased' and 14 per cent saying 'increased'), with a net decrease of just two per cent in 2011, compared to a net decrease of 16 per cent in 2009. Demonstrating that within the sector the amount of training employers are carrying out and the numbers of employees receiving training has increased since 2009 as shown in Figure 4.7.

Figure 4.7: Employees receiving training in last 13 weeks in the CBSE&P Sector 2002-2010 (UK)



Source: Labour Force Survey 2010, ONS

4.3.3 Employee training by Nation

Although the number of employees receiving training in the last four weeks in England is significantly higher than the devolved nations when the data is converted to percentages there is only a variation of two percentage points and the proportion of training occurring in Scotland and Wales (Northern Ireland figure suppressed due to sample size) is actually higher than England which is eight per cent (see Table 4.16).

[21] Training and Skills in the Construction Sector, ConstructionSkills, 2011

Table 4.16: Employees receiving training in last 4 weeks, 2010 (all nations)

	UK	England	Scotland	Wales	Northern Ireland
	%	%	%	%	%
Agriculture, forestry and fishing	6	7	*	*	*
Energy production and utilities	12	12	13	*	*
Manufacturing	9	9	9	11	8
Construction, building services engineering and planning	8	8	9	10	*
Wholesale and retail trade	8	8	9	9	6
Transportation and storage	7	7	8	*	*
Hospitality, tourism and sport	11	11	12	15	*
Information and communication technologies	10	10	*	*	*
Creative media and entertainment	8	8	*	*	*
Financial, insurance & other professional services	15	15	17	19	*
Real estate and facilities management	8	8	11	*	*
Government services	17	17	18	16	8
Education	18	19	17	19	*
Health	24	25	21	22	11
Care	20	20	19	26	*
All economy	13	13	13	14	7
Weighted base (000s)	3,642	3,085	317	188	52
Unweighted base (000s)	*24.012*	*20.155*	*2.164*	*1.215*	*0.478*

**Sample size too small for reliable estimate*
Source: Labour Force Survey 2010, ONS

Table 4.17 shows that the percentages of employees receiving training across the nations are close to the UK figure for the CBSE&P sector of 18 per cent with the exception of Northern Ireland which is much lower at 12 per cent.

Table 4.17: Employees receiving training in last 13 weeks, 2010 (all nations)

	UK	England	Scotland	Wales	Northern Ireland
	%	%	%	%	%
Agriculture, forestry and fishing	13	15	12	*	*
Energy production and utilities	27	27	30	*	*
Manufacturing	18	18	18	20	18
Construction, building services engineering and planning	18	18	21	18	12
Wholesale and retail trade	16	17	17	15	13
Transportation and storage	18	18	19	16	*
Hospitality, tourism and sport	19	19	20	21	*
Information and communication technologies	20	20	22	*	*
Creative media and entertainment	17	17	18	20	*
Financial, insurance & other professional services	29	29	28	32	17
Real estate and facilities management	16	16	23	18	*
Government services	35	35	35	34	24
Education	38	39	34	38	26
Health	46	47	42	44	32
Care	40	40	40	46	27
All economy	25	25	27	24	18
Weighted base (000s)	7,181	6,065	668	312	137
Unweighted base (000s)	*48.93*	*40.947*	*4.41*	*2.282*	*1.291*

**Sample size too small for reliable estimate*
Source: Labour Force Survey 2010, ONS

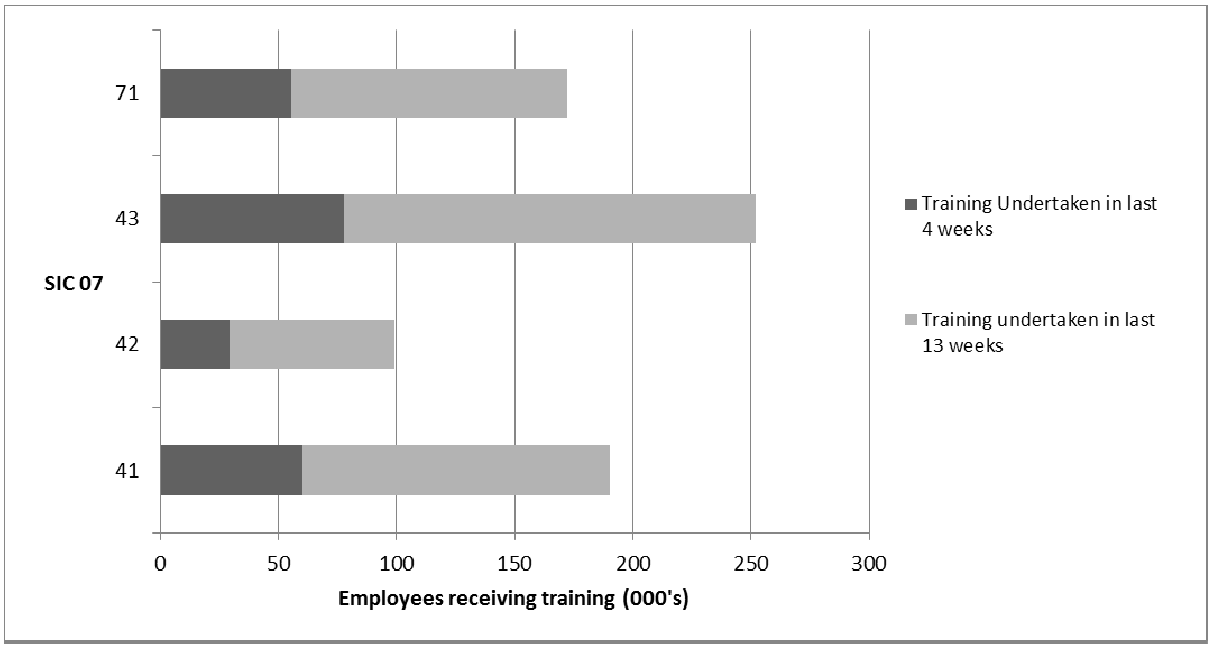
4.3.4 Training by Sub-Sectors

Specialised construction services (SIC 43) is the sector which has carried out the most training over both time scales – 78,000 employees received training in the last four weeks and 174,000 in the last 13 weeks (a total of 252,000).

The construction contracting sector (SIC41) has the second highest amount of training at 190,000, closely followed by the professionals (SIC71) at 172,000. ConstructionSkills 2011 survey on Training and Skills in the Construction Sector also found that a greater proportion of professional services firms had funded or arranged some sort of training for at least one member of staff in the last year (52 per cent compared to 38 per cent in the construction contracting sector).

Interestingly the civil engineering sector (SIC42) had lower numbers of training than the construction sector (SIC 41).

Figure 4.8: Employees receiving training in last 4 weeks and 13 weeks in the CBSE&P Sector by SIC Code



Source: Labour Force Survey 2010, ONS

4.3.5 Type of Training

Table 4.18 shows the spread across different types of training, the profile for construction is very similar to that across the whole economy (as shown in figure 4.9), with the main four types of training in the CBSE&P sector being:

- Job specific training (77 per cent of employers funding or providing this type of training)
- Health & Safety / first aid (72 per cent of employers funding for or providing this type of training)
- Induction training (44 per cent of employers funding or providing this type of training)
- Training in new technology (44 per cent of employers funding or providing this type of training).

This would suggest that these four areas are considered to be the most important and given the lower levels of management and supervisory training it looks like these are seen as being less important which is interesting considering that the labour force survey data shows that nearly all of the employers surveyed recognised skills gaps in their management teams.

These findings are corroborated by ConstructionSkills research [22] which found the most frequently required training was health and safety/first aid and technical or trade specific skills. It seems that this kind of training is always in demand in the construction sector.

Table 4.18: Type of training funded or arranged for employees

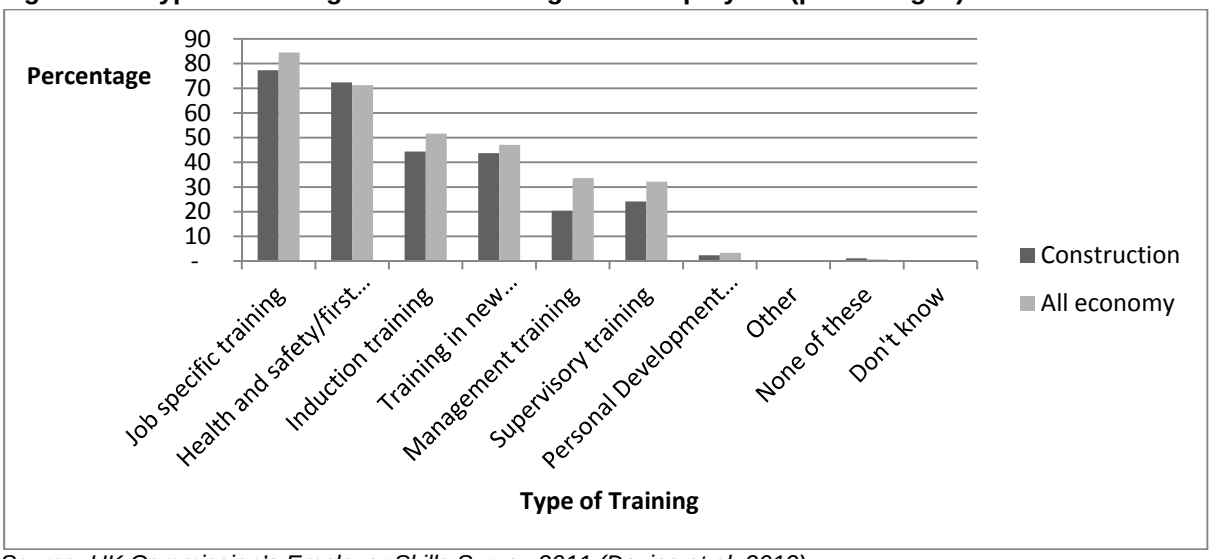
	Construction		All economy	
	Number	%	Number	%
Job specific training	126,513	77	1,149,860	84
Health and safety/first aid training	118,404	72	970,183	71
Induction training	72,601	44	702,846	52
Training in new technology	71,557	44	641,023	47
Management training	33,335	20	457,763	34
Supervisory training	39,494	24	437,577	32
Personal Development Training*	3,891	2	45,451	3
Other	184	**	4,101	**
None of these	1,856	1	8,809	1
Don't know	148	**	2,412	**
Weighted base	163,641		1,361,249	
Unweighted base	6,250		66,916	

Base: All establishments providing training
*** denotes a figure greater than 0% but less than 0.5%*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

It is interesting to note and perhaps surprising that the percentage of firms carrying out health and safety training is virtually the same in the CBSE&P sector as in the whole economy given that health and safety is a significant focus for legislators and employers in the CBSE&P sector. One possible reason for this relates to the composition of the sector. The expectation being that a more significant proportion of firms employing site-based occupations in the CBSE&P sector would have provided health and safety training compared to those whose activity is largely office-based, such is the case with architectural practice. This sub-sectoral variation is undoubtedly hidden in the figures for the CBSE&P sector as a whole. There would also be considerable difference in the level and content of health and safety training received by CBSE&P employees in the sector compared to other sectors.

[22] Training and Skills in the Construction Sector, ConstructionSkills, 2011. Survey consisted of 1207 telephone interviews with construction industry employers, 157 of which were sole traders and 1050 employers.

Figure 4.9: Type of training funded or arranged for employees (percentages)



Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

In the CBSE&P sector apprenticeships play a significant role in qualification and skills development particularly in the construction contracting sector with apprentices making up more than two in every 100 employees. Recent research undertaken by ConstructionSkills[23] has shown an increase in the numbers of employers employing an apprentice since 2009 with 13 per cent of employers having staff undertaking an apprenticeship compared to seven per cent in 2009. Larger firms were found to be much more likely to utilise apprenticeships and organisations offering apprenticeships were more likely to have filled their posts in 2011 than they were in 2009.

Despite the recession firms are still training and planning training for the forthcoming year and the top three factors employers in the sector expected would influence their future skills needs were:

- new regulatory or legislative requirements
- the introduction of new working practices
- the introduction of new technologies or equipment.

The occupations employers believed would be affected by the need to acquire new skills within the next year were:

- Professional Services occupations – architects, building engineers and landscape designers
- Construction Contracting occupations – electricians and scaffolders.

[23] Training and Skills in the Construction Sector, ConstructionSkills, 2011

Areas of training employers anticipate will be required in the next year are mainly health and safety or legislation/regulation related.

4.3.6 Managers & Professionals

In the UK the percentage share of managers/professionals without a Level 4 (or above) qualification peaked in 2006/7 at around 60 per cent which drops during the recession to around 50 per cent (see Table 4.19). In comparison looking at the whole economy (see Table 4.20) the share of managers without Level 4 or above qualifications is much lower in 2010 at 39 per cent compared to 50 per cent in the CBSE&P sector.

Although the overall numbers without these qualifications has actually increased by around 100,000 from 2008 to the 2009 level of 422,000.

Table 4.19: Managers and professionals in the CBSE&P Sector without Level 4 or higher qualifications 2002-2010 (UK)

		2002	2003	2004	2005	2006	2007	2008	2009	2010
Managers or professionals without L4 or higher qualifications	000s	253	263	217	268	311	308	335	422	393
	%	61	62	46	54	61	59	60	51	50
Weighted base (number of managers and professionals)	*000s*	416	428	475	493	507	518	556	835	787

Source: Labour Force Survey 2010 (ONS)

Table 4.20: Managers and professionals (whole economy) without Level 4 or higher qualifications 2002-2010 (UK)

		2002	2003	2004	2005	2006	2007	2008	2009	2010
Managers or professionals without L4 or higher qualifications	000s	3,239	3,336	2,554	3,023	3,460	3,471	3,496	3,371	3,283
	%	45	45	33	38	43	42	42	40	39
Weighted base (number of managers and professionals)	*000s*	*7,214*	*7,481*	*7,726*	*7,866*	*8,123*	*8,201*	*8,356*	*8,406*	*8,483*

Source: Labour Force Survey 2010 (ONS)

Table 4.21 shows higher numbers of managers or professionals without a Level 4 qualification in England than the other nations. Levels have remained fairly consistent over time in all nations except England which has ranged from 217,000 in 2002 increasing each year (generally) to a peak of 370,000 in 2009 with a slight decline in 2010. The results for Northern Ireland can only be taken as indicative but they suggest that there may be less managers or professionals without a Level 4 or higher qualification in Northern Ireland than in the other nations.

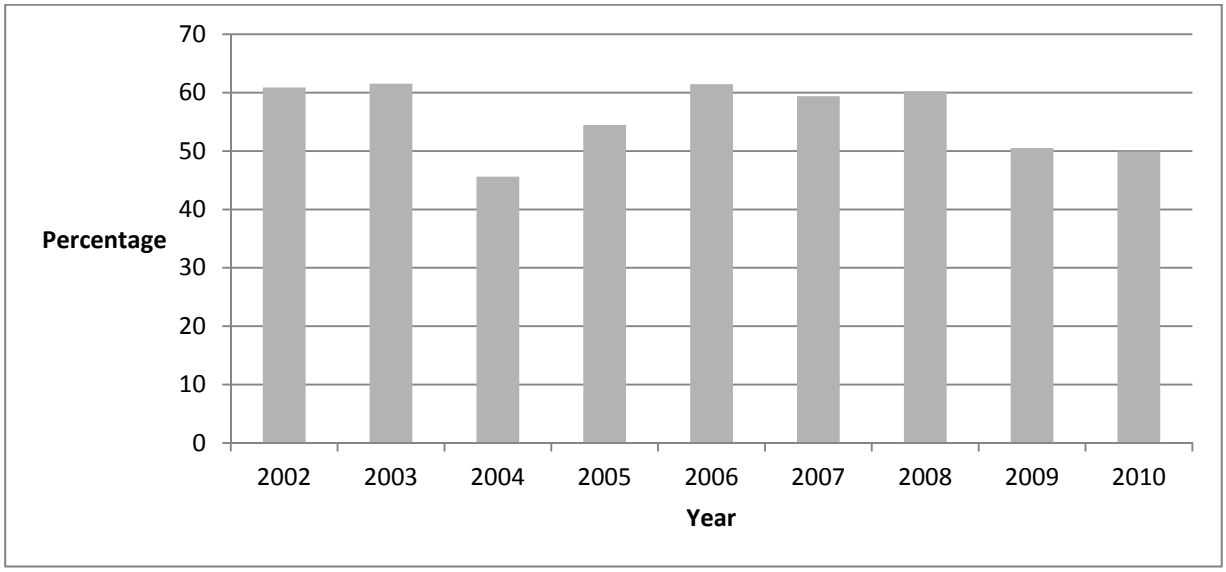
Table 4.21: Managers and professionals without Level 4 or higher qualifications (% of all managers and professionals)

	UK	England	Scotland	Wales	Northern Ireland
	%	%	%	%	%
Agriculture, forestry and fishing	45	43	*	*	*
Energy production and utilities	49	51	41	*	*
Manufacturing	51	51	51	59	35
Construction, Building Services Engineering & Planning	50	51	41	40	*
Wholesale and retail trade	64	64	67	60	50
Transportation and storage	61	59	67	*	*
Hospitality, tourism and sport	66	66	61	70	*
Information and communication technologies	40	40	37	*	*
Creative media and entertainment	38	38	*	*	*
Financial, insurance & other professional services	36	36	38	35	*
Real estate and facilities management	58	59	63	*	*
Government services	31	32	36	29	*
Education	10	11	8	*	*
Health	15	15	*	*	*
Care	30	30	33	*	*
All economy	39	39	37	36	27

** Sample size too small for reliable estimate*
Source: Labour Force Survey 2010 (ONS)

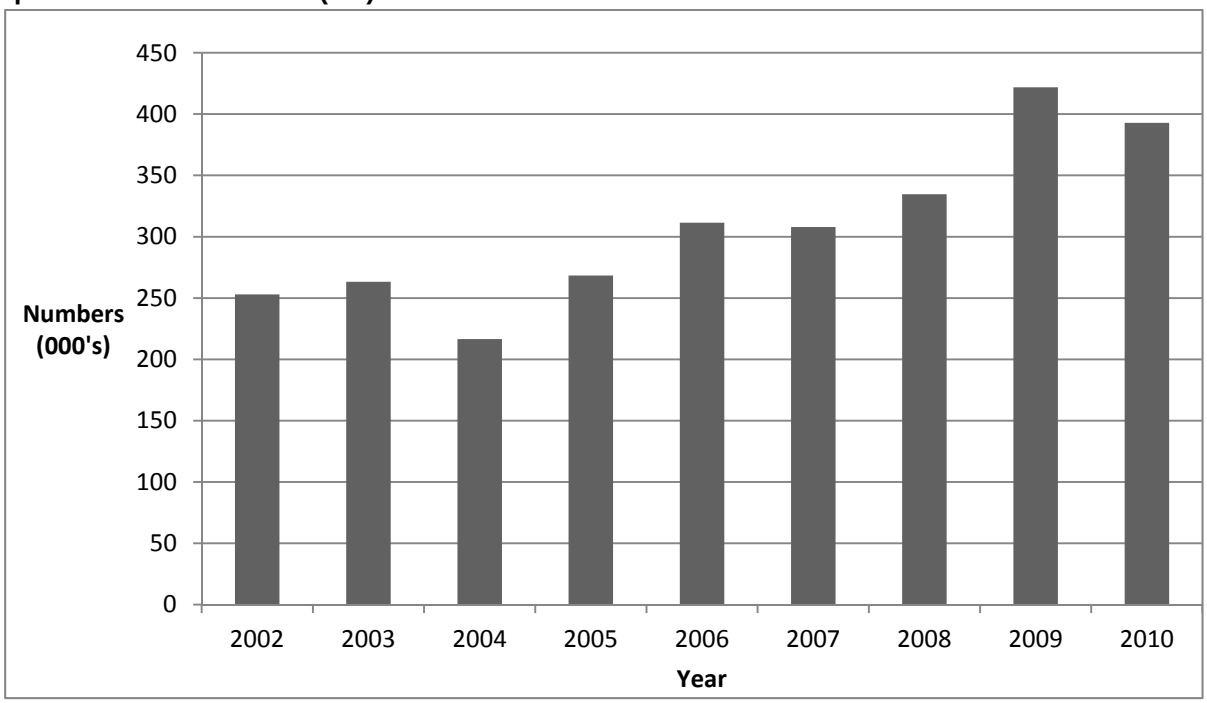
Figures 4.10 and 4.11 show that although the number of managers and professionals without Level 4 or higher qualifications has increased between 2008 and 2010, the percentage of managers and professionals without a Level 4 or higher qualification has actually decreased, so there is a lower proportion of lower qualified managers and professionals.

Figure 4.10: Managers and professionals in the CBSE&P Sector without Level 4 or higher qualifications 2002-2010 2010 (UK, percentages)



Source: Labour Force Survey 2010 (ONS)

Figure 4.11: Managers and professionals in the CBSE&P Sector without Level 4 or higher qualifications 2002-2010 (UK)



Source: Labour Force Survey 2010 (ONS)

ConstructionSkills own research [24] into management and supervisory skills in the construction sector found that a quarter of managerial staff were reported as having a level 4 or 5 qualification and three fifths have at least a level 3 qualification with only seven per

[24] ConstructionSkills, Management & Supervisory Skills Research, 2011. Survey consisted of 22 federation interviews, 1450 quantitative interviews with industry employers who belonged to 20 specified federations and qualitative interviews with 5 federations and 15 employers who were selected on the basis of specific experiences. Survey results are grossed up to the approximate number of employers within each federation.

cent having no formal qualifications. Although this research differs significantly from the LFS in methodology (as it was a one off piece of research as opposed to a four quarter average, for which respondents were employers not households), both surveys found that the proportion of managers without Level 4 or above qualifications was relatively low.

Directors, senior managers and middle managers were the most likely to hold a level 4 or higher qualification and supervisors were the most likely to hold level 2 qualifications. Larger firms tend to have more management staff with qualifications. The survey found that the number of firms who had provided training or development (formal and non-formal) for any of their managerial staff was at a similar level to that shown in the 2007 survey, so it would appear the recession has had little effect on overall levels of managerial training. Managers and supervisors were more likely to have received training in the last 12 months than directors and senior managers, perhaps indicating that firms in the sector place less importance on the latter's training. The survey also found that managerial training tended to be focussed on immediate and job-specific issues rather than strategic or broad management issues aimed at improving business performance.

The survey found that nearly all of the employers recognised skill gaps in their management teams. These were most commonly reported as being in the areas of understanding the importance and implication of 'green' issues and sustainability; keeping up with legislation; IT skills; identifying and winning new business opportunities and risk management.

However those mentioned most frequently are not necessarily the most important, those that were of high incidence and importance were found to be delegation; identifying new markets/clients; new business skills; maximising staff productivity; time management and communication.

4.3.7 Barriers to training

In terms of barriers to training the pattern for the CBSE&P sector is very similar to that of the economy as a whole with over 60 per cent of the employers who do not carry out training stating that this was because they believed that all of their staff were fully proficient (64 per cent for the UK whole economy, between 60 & 71 per cent in the CBSE&P sector), SummitSkills research [25] corroborates this and they state in their 2010 Sector Skills Assessment that according to their employers the vast majority of operatives in the sector have all the skills they need and interestingly the number of firms with this opinion increased from 2008 to 2009.

[25] SummitSkills, Sector Skills Assessment, 2010

The second highest barrier cited was no money available for training (10 per cent for the UK whole economy and between 10 to 18 per cent in the CBSE&P sector) and the third most commonly stated barrier was that the organisations did not consider training to be a priority (nine per cent in the UK whole economy and between 10 to 18 per cent in the CBSE&P sector). Table 4.22 shows a breakdown for the CBSE&P sector. As you would expect in the current economic climate the number of firms citing lack of time to train/be trained/organise training is negligible.

Generally the other issues/barriers stated had values of less than five per cent each in each nation.

Scotland differs slightly when looking at the percentages for the sector as none of its employers stated that training was not considered to be a priority, but 17 per cent of employers in Scotland gave no particular reason for not providing training.

It is also interesting to note that the share of firms stating that they are a small firm and therefore training is not required, is no higher than two per cent, so it would seem that firms in the industry still value training even if the organisation is small. It is also encouraging in respect of training provision as only very small numbers of firms have experienced issues around course provision or location of training courses.

Table 4.22: Barriers to training within the CBSE&P sector

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
All our staff are fully proficient / no need for training	95,540	68	83,017	68	*	*	4,112	71	3,118	60
No money available for training	15,528	11	12,728	10	*	*	819	14	945	18
Training is not considered to be a priority for the establis	13,516	10	11,858	10	*	*	749	13	909	18
No training available in relevant subject area	7,751	6	6,820	6	*	*	317	5	290	6
Managers have lacked the time to organise training	4,366	3	3,940	3	*	*	109	2	169	3
Learn by experience/Learn as you go	1,294	1	1,243	1	*	*	13	**	38	1
External courses are too expensive	3,281	2	2,183	2	*	*	157	3	116	2
Small firm/training not needed due to size of establishm	2,157	2	2,020	2	*	*	107	2	30	1
Employees are too busy to undertake training and devel	1,800	1	1,543	1	*	*	215	4	26	1
Employees are too busy to give training	1,337	1	1,266	1	*	*	36	1	36	1
Business not operating long enough/New business (inc.	1,490	1	1,414	1	*	*	76	1	0	0
Trained staff will be poached by other employers	811	1	625	1	*	*	101	2	85	2
I Don't know what provision is available locally	850	1	748	1	*	*	13	**	89	2
The start dates or times of the courses are inconvenient	611	**	597	**	*	*	0	0	14	**
The courses interested in are not available locally	608	**	508	**	*	*	21	**	15	**
No new staff (only train new staff)	922	1	912	1	*	*	0	0	10	**
The quality of the courses or providers locally is not satis	284	**	284	**	*	*	0	0	0	0
Difficult to get information about the courses available l	255	**	175	**	*	*	15	**	0	0
Other	2,932	2	2,713	2	*	*	129	2	81	2
No particular reason	7,277	5	5,732	5	*	*	174	3	27	1
Don't know	614	**	548	**	*	*	52	1	14	**
Weighted base	140,719		121,910		*		5,813		5,185	
Unweighted base	2,637		2,244		*		190		162	

*Base: All establishments that do not provide training Notes: *Data suppressed as unweighted base <50 in Scotland. ** Denotes a figures of greater than 0% but less than 0.5% Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)*

4.3.8 High performance working

The UK Commission has recently carried out extensive research into high performance working (HPW)[26], which identified that it is a key way in which employers can maximise the potential of their employees and ensure their effective development and deployment. The report found that there was a lack of information on HPW available to employers, and that organisations require more information, insight and intelligence on HPW to convince them that HPW is good for business and to demonstrate how it works and how barriers can be overcome.

There are many different definitions of HPW; however they generally seem to agree on being about engaging the workforce, rewarding performance, promoting employee development, providing flexibility and a certain degree of control to the employee[27]. Some considerable confusion exists around HPW with many different interpretations, and as a result it is not clear what initiatives, support and services are available to employers in the area of HPW.

There was also found to be a measurement gap as current measures of success and performance outcomes sought do not capture the full effect of the initiatives in terms of HPW outputs and outcomes and/or objective measures of business performance outcomes and impacts. This is something that needs to be resolved to enable employers to see the

[26] High Performance Working: A Policy Review, UK Commission, 2010
[27] The Value of Skills: An Evidence Review Evidence Report 22, UK Commission, 2010

tangible benefits of adopting HPW practices and processes and encourage them to participate[28].

UK Commission's research indicates that organisations who implement a range of HPW practices are likely to perform better on a range of key indicators. The research also found that employers in a wide range of sectors could benefit from the introduction of integrated Human Resource Management systems or HPW. The research found a compelling amount of evidence that HPW can have a positive impact on productivity, added-value per employee and profitability. At the time of the report adoption of HPW in the UK was estimated to be no more than a third of all UK firms at best.

There was also considerable evidence that management is one of the most influential factors in achieving higher performance and that companies that apply accepted management practices perform significantly better than those who do not. In the current climate the majority of organisations (particularly in the CBSE&P sector) are focusing on survival and have neither the time nor the resources to explore the benefits of HPW and skills utilisation.

To build a picture of the situation in the CBSE&P sector this report examines how employers identify talent, the extent of variety employees have in their work, autonomy levels and flexible working opportunities.

Identifying talent

As shown in table 4.23, only seven per cent of firms in the CBSE&P sector have a formally documented process for identifying high potential or talented individuals, 29 per cent have an informal way of identifying these individuals, so in total only 36 per cent of firms in the sector have ways of identifying potential talent. The overwhelming majority of firms in the sector have no mechanisms for recognising high potential or talented individuals, which would suggest that it is not important to the majority of the sectors employers. The CBSE&P sector has one of the lowest percentages of firms with formal ways of identifying high potential or talented individuals at seven per cent with the all economy average being double that of the industry at 14 per cent.

[28] High Performance Working: A Policy Review, Evidence Report 18, May 2010, UK Commission

Table 4.23: Whether establishment has formal processes in place to identify 'high potential' or talented individuals

	Formal process for identifying 'high potential' individuals									
	Yes, formally documented		Yes, informally		No		Don't know		Unweighted base	Weighted base
Agriculture, forestry and fishing	5,652	5	30,105	27	72,671	64	4,348	4	820	112,776
Energy production and utilities	2,191	17	4,077	31	6,385	49	486	4	866	13,138
Manufacturing	15,955	12	41,908	31	72,179	54	3,456	3	4,001	133,498
Construction, Building Services Engineering & Planning	21,136	7	89,742	29	185,426	61	8,056	3	4,570	304,360
Wholesale and retail trade	79,322	17	144,464	31	229,455	49	18,075	4	8,093	471,317
Transportation and storage	12,217	10	30,841	26	73,328	61	4,419	4	2,400	120,805
Accommodation, food and tourism activities	32,190	15	69,719	32	109,728	50	7,234	3	5,819	218,871
Information and communication	5,976	8	23,608	32	42,403	58	1,136	2	1,261	73,123
Creative media and entertainment	11,873	8	48,322	33	83,861	57	3,495	2	1,959	147,551
Financial, insurance & other professional services	31,220	18	56,823	33	80,911	47	3,669	2	2,680	172,623
Real estate and facilities management	20,259	13	48,382	30	83,504	52	9,000	6	1,745	161,145
Government	11,426	21	16,967	31	25,307	46	1,600	3	1,379	55,300
Education	18,653	32	20,236	34	18,789	32	1,231	2	2,780	58,909
Health	10,508	20	15,684	30	24,879	47	1,427	3	1,739	52,498
Care	25,788	28	26,675	29	32,817	36	6,485	7	2,455	91,765
All economy	320,952	14	702,866	31	1,198,876	52	77,227	3	44,691	2,299,921

Base: All establishments in Module 1 and Scotland
** suppressed due to base size <25*
*** denotes a figure greater than 0% but less than 0.5%*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Variety in work

As shown in table 4.24 59 per cent of employees in the CBSE&P sector have variety in their work to a large extent, in real terms the sector has the second highest number of employees in this category at 179,144. In percentage terms the sector ranks sixth in terms of percentages who report having a large extent of variety in their work. Only three per cent of employees in the CBSE&P sector have no variety in their work. The sectors profile is very close to the all sector average for each category.

Table 4.24: Extent to which employees have variety in their work

	Extent to which employees have variety in their work											
	To a large extent		To some extent		Not much		Not at all		Don't know		Unweighted base	Weighted base
Agriculture, forestry and fishing	76,675	68	24,469	22	7,742	7	2,816	2	1,074	1	820	112,776
Energy production and utilities	5,929	45	4,909	37	1,795	14	406	3	100	1	866	13,138
Manufacturing	67,095	50	48,484	36	12,899	10	3,756	3	1,262	1	4,001	133,498
Construction, Building Services Engineering & Planning	179,144	59	88,851	29	24,047	8	9,313	3	3,003	1	4,570	304,360
Wholesale and retail trade	238,562	51	168,884	36	48,318	10	11,692	2	3,861	1	8,093	471,317
Transportation and storage	53,146	44	35,613	29	17,947	15	13,259	11	840	1	2,400	120,805
Accommodation, food and tourism activities	86,140	39	83,543	38	37,117	17	9,289	4	2,782	1	5,819	218,871
Information and communication	46,346	63	21,687	30	3,293	5	417	1	1,381	2	1,261	73,123
Creative media and entertainment	99,587	67	37,290	25	7,267	5	2,237	2	1,170	1	1,959	147,551
Financial, insurance & other professional services	94,803	55	60,363	35	12,493	7	3,148	2	1,816	1	2,680	172,623
Real estate and facilities management	92,156	57	51,012	32	15,579	10	1,561	1	837	1	1,745	161,145
Government	33,925	61	17,273	31	2,855	5	391	1	856	2	1,379	55,300
Education	38,306	65	17,346	29	2,187	4	619	1	452	1	2,780	58,909
Health	26,622	51	19,718	38	5,203	10	694	1	260	**	1,739	52,498
Care	54,001	59	31,224	34	4,410	5	972	1	1,159	1	2,455	91,765
All economy	1,256,316	55	745,134	32	212,192	9	64,300	3	21,979	1	44,691	2,299,921

*Base: All establishments in Module 1 and Scotland, * suppressed due to base size <25, ** denotes a figure greater than 0% but less than 0.5%*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Autonomy levels

Table 4.25 examines the extent to which employees are able to use their discretion on how they do their work. The CBSE&P sector follows the general pattern of the all economy averages with roughly the same percentages in each category. In the CBSE&P sector 89 per cent of employees have autonomy to some or a large extent, only 3 per cent of the employees are not able to influence how they do their work. Again the CBSE&P sector has the second highest number of employees who have a large extent of control over how they do their work, indeed the number is between two and three times that of most of the other sectors.

Table 4.25: Extent to which employees have discretion over how they do their work

	Extent to which employees have discretion over how they do their work											
	To a large extent		To some extent		Not much		Not at all		Don't know		Unweighted base	Weighted base
Agriculture, forestry and fishing	61,757	55	39,087	35	6,625	6	2,485	2	2,821	3	820	112,776
Energy production and utilities	5,809	44	4,957	38	1,467	11	557	4	348	3	866	13,138
Manufacturing	63,859	48	49,442	37	11,926	9	5,326	4	2,945	2	4,001	133,498
Construction, Building Services Engineering & Planning	167,066	55	103,337	34	18,624	6	10,627	3	4,706	2	4,570	304,360
Wholesale and retail trade	222,298	47	182,574	39	44,174	9	13,608	3	8,663	2	8,093	471,317
Transportation and storage	60,073	50	38,390	32	12,736	11	8,160	7	1,446	1	2,400	120,805
Accommodation, food and tourism activities	88,190	40	87,712	40	28,331	13	9,926	5	4,712	2	5,819	218,871
Information and communication	48,851	67	20,130	28	3,082	4	614	1	446	1	1,261	73,123
Creative media and entertainment	94,306	64	39,623	27	5,912	4	3,212	2	4,498	3	1,959	147,551
Financial, insurance & other professional services	88,150	51	62,426	36	15,688	9	5,292	3	1,068	1	2,680	172,623
Real estate and facilities management	95,298	59	48,171	30	11,255	7	4,656	3	1,765	1	1,745	161,145
Government	32,235	58	17,718	32	3,674	7	810	1	863	2	1,379	55,300
Education	27,530	47	26,592	45	3,231	5	660	1	897	2	2,780	58,909
Health	22,195	42	21,678	41	6,472	12	1,544	3	608	1	1,739	52,498
Care	48,843	53	36,123	39	3,779	4	1,532	2	1,488	2	2,455	91,765
All economy	1,188,767	52	814,655	35	185,638	8	71,823	3	39,037	2	44,691	2,299,921

Base: All establishments in Module 1 and Scotland
** suppressed due to base size <25*
*** denotes a figure greater than 0% but less than 0.5%*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Flexible working

When measuring the extent to which employees have access to flexible working 46 per cent of CBSE&P employees responded 'to a large extent', a pattern almost identical to that of the all economy average. Only nine per cent of respondents had no access to flexible working.

Table 4.26: Extent to which employees at establishment have access to flexible working

	Employees have access to flexible working											
	To a large extent		To some extent		Not much		Not at all		Don't know		Unweighted base	Weighted base
Agriculture, forestry and fishing	48,869	43	41,468	37	12,485	11	8,004	7	1,950	2	820	112,776
Energy production and utilities	4,781	36	4,419	34	2,431	19	1,450	11	58	**	866	13,138
Manufacturing	52,687	39	44,362	33	17,955	13	16,667	12	1,827	1	4,001	133,498
Construction, Building Services Engineering & Planning	139,674	46	101,224	33	33,585	11	26,266	9	3,610	1	4,570	304,360
Wholesale and retail trade	176,251	37	168,909	36	64,843	14	56,324	12	4,991	1	8,093	471,317
Transportation and storage	44,233	37	38,327	32	16,329	14	20,683	17	1,233	1	2,400	120,805
Accommodation, food and tourism activities	99,272	45	77,239	35	22,537	10	17,703	8	2,120	1	5,819	218,871
Information and communication	42,992	59	20,273	28	5,342	7	4,226	6	289	**	1,261	73,123
Creative media and entertainment	83,200	56	44,734	30	10,011	7	7,602	5	2,004	1	1,959	147,551
Financial, insurance & other professional services	89,019	52	55,484	32	15,828	9	11,747	7	546	**	2,680	172,623
Real estate and facilities management	77,691	48	52,389	33	16,393	10	13,861	9	811	1	1,745	161,145
Government	34,229	62	15,040	27	3,343	6	1,865	3	823	1	1,379	55,300
Education	14,445	25	21,754	37	12,772	22	9,545	16	393	1	2,780	58,909
Health	14,407	27	23,130	44	9,761	19	5,025	10	174	**	1,739	52,498
Care	38,920	42	35,210	38	9,701	11	6,858	7	1,075	1	2,455	91,765
All economy	1,012,366	44	783,411	34	264,071	11	216,701	9	23,372	1	44,691	2,299,921

*Base: All establishments in Module 1 and Scotland, * suppressed due to base size <25, ** denotes a figure greater than 0% but less than 0.5%*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

4.4 Productivity/skills utilisation

The UK's productivity performance has historically lagged behind that of other major industrial countries, however in recent years the gap has narrowed and the UK now ranks 11th out of the 30 Organisation for Economic Cooperation and Development (OECD) countries in terms of productivity[29].

ConstructionSkills has recently completed research into productivity in the construction industry[30] which comprised of 150 telephone interviews with construction managers and supervisors across a range of companies working within the construction sector. This section comprises a brief summary of the findings of this research.

The agency carrying out this research found that there was a widespread lack of interest in taking part in research looking at productivity which resulted in a significantly low level of responses, meaning that the results can only be taken as indicative.

Of the firms interviewed 70 per cent carry out productivity research across their organisations, and this is most common in the repair and maintenance sector, which is not surprising as it is generally twice as labour-intensive as new work. The most common measure of productivity was output with almost a third (32 per cent) stating they measure productivity in terms of output, with a variety of approaches including man hours (eight per cent) and checking against estimates (seven per cent).

A fifth of the respondents (equivalent to 30 respondents) focus on training and development as a method of improving productivity, however the majority did not believe that current

[29] High Performance Working: A Policy Review, Evidence Report 18, May 2010, UK Commission
[30] Productivity in Construction, ConstructionSkills, 2011

training (NVQs and Apprenticeships) equips construction employees with the appropriate skills to work effectively on site, they believe that manufacturers and in-house training is more effective. The deficiency of qualifications to provide productivity training will have implications in terms of skills utilisation of employees.

The occupations considered to have lower productivity were;

- Painting and decorating, 19 per cent
- Plumbers, 13 per cent
- Plasterers, 10 per cent
- Tilers, six per cent
- Groundworkers, six per cent
- Professionals (including architects and designers), six per cent.

Additionally 13 per cent of respondents noted that it was often the working conditions (such as confined spaces, bad weather), which determines productivity rather than the occupation.

Respondents considered the role of industry bodies and government in improving productivity to be largely training related, e.g. providing funding, assisting firms willing to train.

Scotland differs to the rest of the UK as they have been emphasising the importance of skills utilisation since 2007 and it features within their Skills Strategy and they have an established Skills Utilisation Leadership Group which comprises of employers, government and other industry stakeholders.[31]

4.4.1 Impact of training on performance

The data from the UK Commission's Employer Skills Survey[32] shows that approximately half of the employers in the CBSE&P sector (87,580 firms) assess the performance of employees who have received training, compared to 65 per cent of employers in the economy as a whole. The CBSE&P sector ranks third in terms of overall numbers of firms assessing training but 12th in percentage terms. The impact of training is assessed by much higher proportions of firms in the education, health and care sectors. This may suggest that these sectors are more aware of the value and impacts of training. The CBSE&P sector

[31] High Performance Working: A Policy Review, Evidence Report 18, May 2010, UK Commission
[32] UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

needs to be made aware of the benefits of assessing the impact of training, for example: ensuring that training meets the firm's requirements and assessing the return on investment.

ConstructionSkills own research[33] found that the construction contracting sector has a greater proportion of firms assessing the impact of training (41 per cent) than the professionals sector (29 per cent). Larger companies are also much more likely to formally assess the impact of training on staff performance. This may be a reflection of the tendency for larger organisations to be more bureaucratic and have processes for keeping track of spending and analysing investments and whether they are still beneficial to the organisation.

4.4.2 Skills and sectoral performance

Research undertaken by UK Commission into the value of skills[34] found that:

- The level of product market strategy and average skill level within establishments are positively correlated: the higher the product market strategy, the higher the average level of skill required within the workforce
- The higher the product market strategy and skill level, the less likely it is that the establishment will suffer from skill gaps
- There is some evidence that development of higher product market strategies may be constrained by skill gaps, particularly if these skill gaps involve managers
- The higher the product market strategy and the skill level of the workforce, the higher will be perceived future up-skilling needs.

A recent report commissioned by the Department for Business Innovation and Skills[35] was based on a global study designed to 'examine whether a wider take up of engagement approaches could impact positively on UK competitiveness and performance and meet the challenges of increased global competition'. The report defines employee engagement strategies as

> A strategy that will enable people to be the best they can at work, recognising that this can only happen if they feel respected, involved, heard, well led and valued by those they work for and with.

[33] Training and Skills in the Construction Sector, ConstructionSkills, 2011
[34] The Value of Skills: An Evidence Review Evidence Report 22, UK Commission, 2010
[35] Engaging for Success: Enhancing performance through employee engagement, David Macleod & Nita Clarke, 2009

This report cites amongst others research carried out in 2006 by Tower Perrins-ISR[36] which found that firms with a highly engaged workforce improved their operating income by 19.2 per cent over a 12 month period, whereas those with low engagement scores saw their operating income decline by 32.7 per cent.

Over the 12 month period the firms with high engagement scores demonstrated a 13.7 per cent improvement in net income growth whilst those with low engagement saw net income growth decline by 3.8 per cent. Further to this research by Gallup[37] found that firms in the top quartile of engagement scores had 27 per cent higher profitability than those in the bottom half.

The report also contains many supporting case studies, two of which are construction companies, Amey and JCB, each of whom took different approaches.

- Amey's chief executive said:

> Employee engagement is a critical issue for Amey if we are to continually improve our service to the customer and ultimately the public. Line managers are essential to improving engagement, so supporting them to truly engage with their teams is a priority for Amey.

Amey's engagement strategy utilised an engagement survey and an action process that had taken root throughout the business. The firm also obtained Investors in People accreditation which also gave them a competitive edge in winning work and attracting new employees. The rewards experienced include; a decreasing staff attrition rate, reduction of lost productivity hours and lower recruitment and training costs.

JCB utilised employee engagement practices (regular face to face briefings, union consultation) to work with staff to develop a strategy to survive the recession and avoid redundancies and also enlist the employees' participation in a company-wide cost reduction exercise necessary to survive the difficult market conditions. This is proof of the assertion that employee engagement approaches can help organisations deal with the challenges of recession made in the report by David Macleod and Nita Clarke, because by establishing trust employers can unlock more of the knowledge and commitment of individual employees, for example in improving efficiency and effectiveness, as demonstrated by the JCB case study.

By engaging their employees JCB were able to make difficult decisions whilst still maintaining the support of their workforce.

[36] The ISR Employee Engagement Report, Towers Perrin-ISR, 2006
[37] Engagement Predicts Earnings Per Share, Gallup Organisation, 2006

The research also found that many organisations have been working closely and collaboratively with staff to mitigate the effects of scarce credit and collapsing markets on the workforce as well as trying to maintain training and development of staff despite the cost pressures.

The research concludes that investment in the skills and training of the workforce can bring significant financial rewards and is suited to pursuing a strategy of quality and customer service over a strategy of competing on price.

Further to this UK Commission research[38] confirms that there are relationships between an organisations product strategy (quality vs. price), and employee skill gaps and skill updating needs. Organisations with a high end product strategy tend to have higher skill level requirements and also tend to be more aware of skill updating needs. The report also found that a firm's ability to move from a low end product strategy to a higher one may possibly be constrained by the shortage of skills required to achieve this as although business strategies and firm levels of resources/capabilities tend to co-evolve over time their ability to move to a higher end product strategy is influenced by the resources and capabilities available to them.

In summary research into high performance working and employee engagement practices suggests that there is a link between the level of product market strategy and the level of skill required by the workforce, and having a highly engaged workforce is likely to increase profitability and can also be beneficial to ensuring the firms survival through difficult circumstances, such as the current economic climate. Based on the indicative results of ConstructionSkills productivity survey it seems that some of the employers in the sector do not believe that current training equips employees to work effectively on site and that for productivity to improve government and industry bodies should focus on training and assisting the industry to train. The research also indicates that firms in the CBSE&P sector do not assess the impact of training on individual performance; therefore they cannot quantify the effect it has had.

[38] Product Strategies, Skill Shortages and Skill Updating Needs in England: New evidence from the National employer Skills Survey, 2009, evidence report 30, UK Commission, 2011.

5 Extent of skills mis-match

Chapter Summary

- In 2011 vacancies were reported by seven per cent of employers across the UK Construction, Building Services Engineering and Planning (CBSE&P) sector according to the UK Commission's Employer Skills Survey 2011 (Davies et al, 2012). This equates to two per cent of total employment within the sector which is comparable to the UK economy.
- Compared to all sectors, the CBSE&P sector has an above average share of both Hard to Fill (HTF) Vacancies and Skill Shortage Vacancies (SSV), as a percentage of all vacancies.
- Employers within the CBSE&P sectors in England, Scotland and Wales have above average SSVs as a share of vacancies whereas employers in Northern Ireland are below average.
- The greatest volume of vacancies within the UK CBSE&P sector were for both skilled trades and professional occupations.
- Once a vacancy is filled the sector does not have a problem retaining staff, CBSE&P employers were below the all sector average when reporting retention difficulties.
- Job specific and technical/practical skills are the most frequently reported types of skill lacking within the CBSE&P.
- In numeric terms skilled trades are the most likely to have skills gaps, however as a share of employment, workers employed in unskilled or semi-skilled occupations are the most likely to be described as lacking full proficiency.
- Three-quarters of UK CBSE&P employers reporting skill gaps have responded by either increasing the amount of training or increasing the amount spent on training.
- Four in ten employers across the UK CBSE&P sector reported under-employment within their workforces, which is less than the national average.
- Average wages are higher than the comparable all economy figure, however growth in hourly wages has remained below the all economy level.
- Five per cent of CBSE&P employment comes from the Rest of Europe (EU27), which is on a par with the level across all sectors.

- Although skills deficiencies do not appear to be hampering growth in the sector at the moment, this position could change if there was a stronger than expected economic recovery.

5.1 Extent and nature of vacancies

In 2011 vacancies were reported by seven per cent of employers across the UK Construction, Building Services Engineering and Planning (CBSE&P) sector according to the UK Commission's Employer Skills Survey 2011 (Davies et al, 2012). In volume terms, the number of vacancies was around 47,000, which equated to two per cent of total employment within the sector, comparable to the proportion for the whole UK economy (also two per cent) as shown in Table 5.1.

CBSE&P employers reported just over 19,000 hard-to-fill vacancies (HtFVs), which represent 40 per cent of all vacancies. Two-thirds (65 per cent) of HtFVs are considered to be skill shortage vacancies (SSVs) and account for a quarter (26 per cent) of all vacancies. Compared to the total for all sectors, CBSE&P has an above average share of both HtFVs and SSVs as a percentage of all vacancies. Along with the Agriculture, Forestry and Fishing sector, CBSE&P are ranked in the top two on both these measures.

Table 5.1: Profile of vacancies by sector

	Volume			%				
	Vacancies	HTF vacancies	SSV (prompted and unprompted)	Vacancies as a % employment	HTF vacancies as a % vacancies	SSV as a % vacancies	*Weighted base*	*Unweighted base*
Agriculture, Forestry & Fishing	14,641	5,785	4,238	3	40	29	466,870	19,506
Energy Production & Utilities	9,343	1,590	1,236	3	17	13	333,050	47,228
Manufacturing	40,252	11,834	9,711	2	29	24	2,541,188	291,593
Construction, Building Services Engineering and Planning	47,241	19,103	12,394	2	40	26	2,235,270	150,111
Wholesale & Retail Trade	95,390	17,441	12,619	2	18	13	4,674,684	514,820
Transportation and Storage	25,734	4,739	3,182	2	18	12	1,320,126	114,658
Hospitality, Tourism and Sport	73,886	18,245	11,179	3	25	15	2,313,487	258,524
Information and Communication Technologies	29,361	5,449	4,937	5	19	17	614,641	53,681
Creative Media & Entertainment	37,885	6,824	5,502	3	18	15	1,086,978	87,953
Financial, Insurance & other Professional Services	58,847	11,732	10,623	3	20	18	2,052,039	112,945
Real Estate & Facilities Management	31,155	5,773	4,252	3	19	14	1,183,601	91,204
Government Services	35,917	9,330	5,938	2	26	17	1,780,058	223,796
Education	34,684	4,984	3,729	1	14	11	2,538,545	387,221
Health	27,811	5,281	3,330	1	19	12	2,004,436	219,765
Care	37,494	5,924	3,335	2	16	9	1,504,729	157,681
Not Within Scope	36,266	9,533	7,248	4	26	20	897,422	86,007
Total	635,907	143,564	103,453	2	23	16	27,547,123	2,816,693

Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Geographical analysis of the profile of vacancies by sector shows a consistency across nations within the CBSE&P sector when comparing vacancies as a share of employment, as highlighted in Table 5.2. These findings are also comparable to the national averages (two per cent). However a divergence between nations emerges when both HtFVs and SSVs as a share of vacancies are measured. A similarity exists between CBSE&P employers in England and Wales when their HtFV are analysed as a share of vacancies (42 per cent and 41 per cent respectively) much higher than the findings in Scotland and Northern Ireland (29 per cent and 27 per cent respectively). However, all nations, with the exception of Northern Ireland are above the national averages; most prominently in England where employers in the CBSE&P sector have the highest incidence of HtFVs as a share of vacancies than all other sectors. Similarly employers within the CBSE&P sectors in England, Scotland and Wales also have above average SSVs as a share of vacancies whereas employers in Northern Ireland are below average.

Table 5.2: Profile of vacancies by sector and nation

	Vacancies as a % employment				HTF vacancies as a % vacancies				SSV as a % vacancies			
	England	Scotland	Wales	NI	England	Scotland	Wales	NI	England	Scotland	Wales	NI
Agriculture, forestry & fishing	3	†4	2	0	36	†45	87	0	28	†22	85	0
Energy production & utilities	2	7	4	1	11	22	32	49	9	17	22	25
Manufacturing	2	1	2	2	28	39	30	33	23	36	27	29
Construction, Building Services Engineering and Planning	2	2	2	1	42	29	41	27	26	24	34	16
Wholesale & retail trade	2	2	2	2	18	17	23	32	13	10	12	18
Transportation and Storage	2	2	3	1	17	6	48	60	12	3	29	11
Hospitality, Tourism and Sport	3	3	4	2	23	25	56	29	13	17	41	23
Information and Communication Technologies	5	†5	3	3	18	†35	19	13	16	†28	17	13
Creative media & entertainment	3	†2	5	11	20	†1	18	7	16	†0	16	4
Financial, Insurance & other Professional Services	3	2	2	11	19	7	12	44	17	6	12	44
Real estate & facilities management	3	†1	2	1	18	†29	17	0	14	†22	12	0
Government services	2	1	2	2	25	10	46	43	17	5	4	36
Education	1	2	1	1	16	6	6	16	12	2	5	11
Health	2	1	1	1	19	19	17	27	12	9	13	27
Care	3	1	3	3	16	19	20	13	9	16	13	3
Total	2	2	2	2	22	20	36	44	16	14	22	22
Weighted base	23,198,476	2,381,601	1,182,314	784,732	545,064	45,749	25,542	19,552	545,064	45,749	25,542	19,552
Unweighted base	2,345,213	201,868	178,922	90,690	43,960	3,186	2,999	1,759	43,960	3,186	2,999	1,759

Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012). Bases vary. Vacancies as a % of employment based on all employment. Hard-to-fill vacancies as a % of vacancies based on all vacancies. SSVs as a % of vacancies based on all vacancies. † Treat figures with caution due to small establishment base size of 50-99 in Scotland.

Table 5.3 illustrates how half of all vacancies within the CBSE&P sector were split between skilled trades and professionals with a quarter (25 per cent) each. However when considering HtFVs by occupation; sales and customer service staff are noticeable in accounting for a quarter (25 per cent) of these alongside skilled trades (23 per cent) and professionals (26 per cent). In other words these three occupational groups make up three-quarters (75 per cent) of all HtFVs in the UK CBSE&P sector. The prominence of HtFVs in sales and customer service is further highlighted by their share of all vacancies which is 78 per cent. However, the proportion of these vacancies where skill shortages are encountered is only four per cent. SSVs are more acute for professionals (38 per cent), associate professionals (33 per cent), Managers (32 per cent) and skilled trades (31 per cent).

Table 5.3: Profile of vacancies by occupation within the CBSE&P sector

	Volume						
	Vacancies	HTF vacancies	SSV	HTF vacancies as a % vacancies	SSV as a % vacancies	*Weighted base (number of vacancies)*	*Unweighted base (number of vacancies)*
Managers	1,554	539	499	35	32	1,554	97
Professionals	11,647	4,952	4,423	43	38	11,647	758
Associate professionals	6,030	2,176	2,009	36	33	6,030	403
Administrative/clerical staff	3,326	501	379	15	11	3,326	187
Skilled trades occupations	11,972	4,488	3,728	37	31	11,972	746
Caring, leisure and other services staff	*	*	*	*	*	*	*
Sales and customer services staff	6,202	4,811	263	78	4	6,202	203
Machine operatives	3,850	972	721	25	19	3,850	230
Elementary staff	2,087	605	314	29	15	2,087	100
Unclassified staff	*	*	*	*	*	*	*
Total	47,178	19,103	12,395	40	26	47,178	2,756

Bases: All vacancies
** Data suppressed as unweighted establishment base < 25*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

As discussed above, the greatest volume of vacancies within the UK CBSE&P sector were for both skilled trades and professional occupations, with vacancies in both occupations being reported by two per cent of all employers. However there exist geographical variations, as can be seen in Table 5.4.

Table 5.4: CBSE&P employers reporting vacancies by occupation and nation

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Managers	931	**	827	**	85	**	6	**	14	**
Professionals	5,624	2	5,270	2	234	1	91	1	28	**
Associate professionals	4,087	1	3,765	1	146	1	106	1	71	1
Administrative/clerical staff	3,000	1	2,640	1	197	1	53	*	110	1
Skilled trades occupations	7,562	2	6,534	3	570	3	370	3	88	1
Caring, leisure and other services staff	9	**	9	**	0	0	0	0	0	0
Sales and customer services staff	938	**	824	**	96	**	18	**	0	0
Machine operatives	2,071	1	1,869	1	27	**	85	1	89	1
Elementary staff	1,529	**	1,286	**	18	**	103	1	122	1
Unclassified staff	227	**	183	**	28	**	0	0	16	**
Weighted base	306,403		261,155		21,346		13,161		10,742	
Unweighted base	8,961		7,538		300		660		463	

Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Table 5.5 shows how the different types of vacancy are distributed across the sectors of the UK economy.

Table 5.5: Distribution of vacancies, hard-to-fill vacancies and skill shortage vacancies by sector (UK)

	Vacancies		HTF vacancies		SSV			
	Number	%	Number	%	Number	%	*Weighted base*	*Unweighted base*
Agriculture, Forestry & Fishing	8,285	3	4,141	5	2,660	4	110,220	1,547
Energy Production & Utilities	1,783	1	635	1	532	1	12,610	1,614
Manufacturing	17,423	6	7,684	8	6,040	9	130,709	7,776
Construction, Building Services Engineering and Planning	22,972	8	11,596	13	9,607	14	306,403	8,961
Wholesale & Retail Trade	50,681	18	13,499	15	9,778	14	470,200	16,150
Transportation and Storage	13,036	5	4,127	5	2,662	4	122,058	4,735
Hospitality, Tourism and Sport	32,674	12	11,656	13	7,435	11	220,055	11,318
Information and Communication Technologies	9,146	3	3,596	4	3,386	5	72,281	2,510
Creative Media & Entertainment	16,182	6	5,506	6	4,746	7	143,772	3,762
Financial, Insurance & other Professional Services	21,794	8	5,310	6	4,556	7	170,887	5,343
Real Estate & Facilities Management	17,403	6	4,651	5	3,956	6	166,486	3,424
Government Services	8,185	3	1,877	2	1,204	2	54,687	2,605
Education	14,466	5	3,220	4	2,386	4	64,540	5,439
Health	9,577	3	2,820	3	1,842	3	52,370	3,398
Care	15,589	6	3,956	4	2,054	3	87,899	4,763
Not in scope	15,583	6	6,497	7	5,121	8	114,744	4,227
Total	274,779	100	90,771	100	67,965	100	2,299,921	87,572

Base: All employers
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Table 5.5 highlights the impact of both HtFVs and SSVs across the CBSE&P sector. Whilst only accounting for eight per cent of all vacancies, CBSE&P employers report a much higher incidence of both HtFVs (13 per cent) and SSVs (14 per cent).

5.1.1 Retention and Recruitment

The evidence presented thus far emphasises how both HtFVs and SSVs are an issue within the CBSE&P sector; however the data also suggests that once a vacancy is filled the sector does not have a problem retaining staff, with only four per cent of employers reporting retention problems. This varied considerably between the nations from five per cent in Wales to only one per cent in Northern Ireland. Compared to all sectors CBSE&P employers were below average in reporting retention problems. In fact in Northern Ireland the CBSE&P sector had the least retention problems compared to all sectors.

Table 5.6: Retention problems, by sector and nation

	UK (excl. Scotland)		England		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%
Agriculture, Forestry & Fishing	4,954	5	4,236	5	360	3	358	5
Energy Production & Utilities	555	5	484	5	62	8	9	2
Manufacturing	6,493	5	5,883	5	433	8	177	5
Construction, Building Services Engineering and Planning	10,569	4	9,710	4	722	5	138	1
Wholesale & Retail Trade	18,192	4	16,682	4	891	4	619	4
Transportation and Storage	5,676	5	5,240	5	321	8	115	5
Hospitality, Tourism and Sport	18,345	9	16,670	9	1,126	10	548	9
Information and Communication Technologies	3,084	4	2,948	4	57	3	79	7
Creative Media & Entertainment	5,303	4	4,891	4	306	7	106	5
Financial, Insurance & other Professional Services	6,271	4	5,876	4	339	6	55	2
Real Estate & Facilities Management	5,826	4	5,649	4	139	5	38	2
Government Services	2,496	5	2,200	5	208	8	88	4
Education	2,925	5	2,493	5	267	8	165	5
Health	3,297	7	2,961	7	249	9	87	6
Care	5,134	6	4,615	6	327	7	191	6
Not within scope	6,810	6	6,476	6	247	6	87	3
Whole Economy	105,929	5	97,014	5	6,054	6	2,860	4
Weighted base	2,124,807		1,960,298		98,952		65,558	
Unweighted base	85,069		75,053		6,012		4,004	

Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

The main reason given by CBSE&P employers for a retention problem was that there are not enough people interested in doing this type of work (46 per cent). Although this is not an issue specific to the CBSE&P sector as it was also the main reason across all the sectors both on a UK level and within each nation.

Where retention problems were identified employers across the UK CBSE&P sector (excluding Scotland) reported that more strain on the management of existing staff in covering the shortage was the main consequence (70 per cent). Although in Wales increased running costs were considered the biggest impact (70 per cent). Overall employers had taken measures to address retention problems, with nearly a third (31 per cent) across the UK introducing further training/development opportunities. Although this was not the situation across each nation of the CBSE&P sector; most notably in Wales where over half of employers (56 per cent) had not taken any measures to overcome retention difficulties.

On average a fifth (22 per cent) of employers across the CBSE&P sector had recruited young people (aged under 24 years) into their first job in the last three years, in-line with the overall national findings (24 per cent). The main exception within the CBSE&P sector was employers in Scotland who were more likely to have recruited young people (30 per cent) than their national average (25 per cent).

Table 5.7: Recruitment of young people by sector and nation

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry & fishing	21,769	20	14,815	19	†2,725	†20	1,183	11	3,046	43
Energy production & utilities	2,660	21	2,080	21	322	25	197	24	61	11
Manufacturing	31,047	24	26,304	23	2,442	26	1,437	27	863	23
Construction, building services engineering and planning	66,741	22	55,108	21	6,498	30	2,973	23	2,161	20
Wholesale & retail trade	120,702	26	101,878	25	9,862	28	5,297	25	3,665	26
Transportation and storage	18,432	15	16,069	15	1,496	19	476	11	391	17
Hospitality, tourism and sport	70,608	32	59,071	33	6,164	28	3,583	32	1,789	31
Information and communication technologies	14,960	21	13,659	21	†794	†22	241	12	266	24
Creative media & entertainment	31,843	22	28,704	23	†1,573	†14	1,082	23	484	24
Financial, insurance & other professional services	37,955	22	34,274	22	1,679	20	1,230	21	773	23
Real estate & facilities management	23,229	14	21,827	15	†699	†6	475	16	229	12
Government services	10,268	19	8,375	19	1,084	20	378	14	431	21
Education	28,641	44	24,132	45	1,812	41	1,450	45	1,247	38
Health	13,817	26	11,547	26	938	29	822	29	510	34
Care	26,557	30	22,175	31	1,955	23	1,481	34	947	29
All economy	552,385	24	467,925	24	43,211	25	23,664	24	17,584	27
Weighted base	*2,124,807*		*1,960,298*		*175,115*		*98,952*		*65,558*	
Unweighted base	*85,069*		*75,053*		*2,503*		*6,012*		*4,004*	

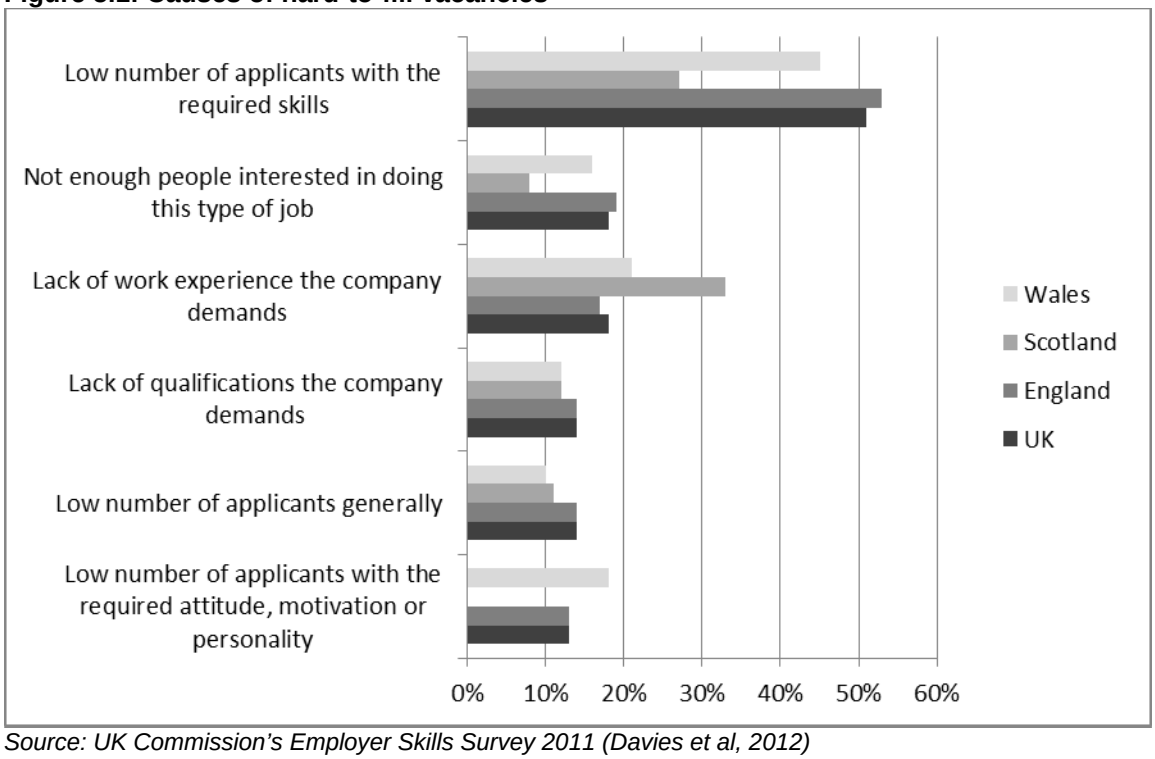
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012). Base: all establishments. NB: Scottish employers were asked a slightly different question; results cannot be compared directly to UK, England, Wales, or Northern Ireland figures. Scottish employers have not been included in the UK base. † Treat figures with caution due to small base size of 50-99 establishments in Scotland.

5.2 Extent and nature of skills issues

Just over half (51 per cent) of all HtFVs across the UK CBSE&P sector are described by employers as caused, at least in part by a lack of skills amongst applicants. This finding was replicated in England and Wales, but Scottish employers considered a lack of work experience as the biggest concern (33 per cent). Overall however 83 per cent of CBSE&P employers reported that HtFVs are the result of a skills-related reason (a lack of skills, experience or qualifications). This balance between skills, experience and qualification equates to a skill-shortage vacancy (SSV).

Figure 5.1 below shows a breakdown of the top six causes of HtFVs across the UK CBSE&P sector split by nation which highlights the different concerns raised by employers in Scotland – in addition to the issue raised above, no employers in the Scottish CBSE&P sector reported a low number of applicants with the required attitude, motivation or personality to be a concern.

Figure 5.1: Causes of hard-to-fill vacancies



Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Employers were asked which particular skills they found difficult to obtain where SSVs existed. Table 5.8 shows results based on the total number of SSVs.

Table 5.8: Skills lacking in Skills Shortage Vacancies

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Basic computer literacy / using IT	2,056	17	1,876	17	*	*	*	*	*	*
Advanced IT or software skills	2,502	20	2,282	21	*	*	*	*	*	*
Oral communication skills	4,769	38	4,128	38	*	*	*	*	*	*
Written communication skills	4,823	39	4,154	38	*	*	*	*	*	*
Customer handling skills	4,510	36	3,855	35	*	*	*	*	*	*
Team working skills	3,507	28	3,002	28	*	*	*	*	*	*
Written Welsh language skills	24		0	0	*	*	*	*	*	*
Oral Welsh language skills	34		0	0	*	*	*	*	*	*
Foreign language skills	1,894	15	1,511	14	*	*	*	*	*	*
Problem solving skills	5,166	42	4,542	42	*	*	*	*	*	*
Planning and Organisation skills	6,361	51	5,642	52	*	*	*	*	*	*
Strategic Management skills	4,465	36	3,795	35	*	*	*	*	*	*
Numeracy skills	2,640	21	2,376	22	*	*	*	*	*	*
Literacy skills	3,036	24	2,726	25	*	*	*	*	*	*
Office admin skills	1,777	14	1,627	15	*	*	*	*	*	*
Technical or practical skills	7,586	61	6,626	61	*	*	*	*	*	*
Job specific skills	9,442	76	8,277	76	*	*	*	*	*	*
Experience/lack of product knowledge	21		21		*	*	*	*	*	*
Personal attributes e.g. motivation, work ethos, commor	84	1	84	1	*	*	*	*	*	*
Other	214	2	214	2	*	*	*	*	*	*
No particular skills difficulties	409	3	377	3	*	*	*	*	*	*
Don't know	194	2	194	2	*	*	*	*	*	*
Weighted base	*12,394*		*10,899*		*		*		*	
Unweighted base	*740*		*595*		*		*		*	

Base: All skills shortage vacancies
**Suppressed due to establishment base size <25 (<50 in Scotland)*
Notes: Column percentages sum to more than 100 since multiple responses were allowed.

Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012) Job specific and technical/practical skills are the most frequently reported types of skill lacking within the CBSE&P sector. These findings are in-line with the national results for all sectors.

An increased workload for other staff is the most common impact of recruitment difficulties, and was reported by just over four-fifths (82 per cent) of employers across the UK CBSE&P sector. While half of these employers also considered the loss of business/orders to competitors and increased operating costs as impacts. Across each nation within the CBSE&P sector there was some variation in the hierarchy of impacts as illustrated in Table 5.9 below.

Table 5.9: Impact of hard-to-fill vacancies within the CBSE&P sector by geography

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Increase workload for other staff	9,509	82	8,722	83	*	*	295	71	*	*
Have difficulties meeting customer services objectives	4,820	42	4,280	41	*	*	200	48	*	*
Lose business or orders to competitors	5,741	50	5,264	50	*	*	235	56	*	*
Delay developing new products or services	5,119	44	4,700	45	*	*	205	49	*	*
Experience increased operating costs	5,827	50	5,385	51	*	*	140	34	*	*
Have difficulties meeting quality standards	3,353	29	3,018	29	*	*	104	25	*	*
Have difficulties introducing new working practices	2,816	24	2,344	22	*	*	249	60	*	*
Outsource work	4,149	36	3,859	37	*	*	153	37	*	*
Withdraw from offering certain products or services altog	3,268	28	3,036	29	*	*	137	33	*	*
Have difficulties introducing technological change	2,362	20	2,036	19	*	*	199	48	*	*
None	484	4	380	4	*	*	39	9	*	*
Don't know	35	**	10	**	*	*	0	0	*	*
Weighted base	11,596		10,530		*		417		*	
Unweighted base	468		398		*		34		*	

Base: All employers with hard-to fill-vacancies
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)
**Suppressed due to establishment base size <25 (<50 in Scotland)*
***Denotes a figure greater than 0% but less than 0.5%.*
Column percentages sum to more than 100 since multiple responses were allowed.

Clearly recruitment difficulties have a significant impact on CBSE&P employers; with only one in twenty-five employers across the UK stating there were no negative impacts as a

result of their recruitment difficulties (four per cent); although this increased to nine per cent in Wales and 14 per cent in Scotland.

The vast majority of CBSE&P employers experiencing HtFVs has taken at least some steps to try and overcome these problems, with the most common actions taken being to increase advertising/recruitment spend (32 per cent) and use new recruitment methods or channel (31 per cent); a pattern replicated across the nations. However employers in Scotland were the most likely to have taken action, with only three per cent stating they had done nothing; compared to 13 per cent on average across the UK, as illustrated in Table 5.10.

Table 5.10: Measures taken by CBSE&P employers to overcome hard-to-fill vacancies by geography

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Increasing advertising / recruitment spend	3,667	32	3,361	32	*	*	84	29	*	*
Using NEW recruitment methods or channels	3,568	31	3,269	31	*	*	101	34	*	*
Redefining existing jobs	1,150	10	1,080	10	*	*	11	4	*	*
Increasing the training given to your existing workforce	544	5	459	4	*	*	40	14	*	*
Increasing / expanding trainee programmes	666	6	520	5	*	*	15	5	*	*
Being prepared to offer training to less well qualified rec	624	5	580	6	*	*	36	12	*	*
Bringing in contractors to do the work, or contracting it o	795	7	771	7	*	*	9	3	*	*
Increasing salaries	403	3	391	4	*	*	6	2	*	*
Recruiting workers who are non-UK nationals	734	6	673	6	*	*	0	0	*	*
Making the job more attractive e.g. recruitment incentiv	75	1	45	*	*	*	0	0	*	*
Other	719	6	686	7	*	*	12	4	*	*
Nothing	1,551	13	1,394	13	*	*	45	15	*	*
Don't know	585	5	520	5	*	*	0	0	*	*
Weighted base	11,596		10,530		*		295		*	
Unweighted base	468		398		*		33		*	

Base: All employers with hard-to fill-vacancies
**Suppressed due to establishment base size <25 (<50 in Scotland)*
Column percentages sum to more than 100 since multiple responses were allowed.
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

In addition to experiencing skill deficiencies within the external workforce, as discussed above through HtFVs and their resultant SSVs, employers can also encounter skills issues within their internal workforce, which are demonstrated as skills gaps.

One in ten employers across the UK CBSE&P sector reported that they employed staff whom they considered not fully proficient, amounting to around 99,000 workers or four per cent of the workforce. Both the proportion of establishments reporting that they employ staff lacking proficiency and the share of staff that lack proficiency is lower than the UK average for all sectors, as shown in Table 5.11.

Table 5.11: Employers and employees with skills gaps by sector

	Employers with skills gaps				Employees with skills gaps			
	Number	%	*Weighted base*	*Unweighted base*	Number	%	*Weighted base*	*Unweighted base*
Agriculture, Forestry & Fishing	10,665	10	110,220	1,547	20,149	4	466,870	19,506
Energy Production & Utilities	2,000	16	12,610	1,614	17,250	5	333,050	47,228
Manufacturing	21,520	16	130,709	7,776	148,007	6	2,541,188	291,593
Construction, Building Services Engineering and Planning	31,925	10	306,403	8,961	99,184	4	2,235,270	150,111
Wholesale & Retail Trade	72,233	15	470,200	16,150	300,344	6	4,674,684	514,820
Transportation and Storage	11,540	9	122,058	4,735	55,391	4	1,320,126	114,658
Hospitality, Tourism and Sport	43,000	20	220,055	11,318	193,549	8	2,313,487	258,524
Information and Communication Technologies	6,647	9	72,281	2,510	34,775	6	614,641	53,681
Creative Media & Entertainment	9,155	6	143,772	3,762	41,091	4	1,086,978	87,953
Financial, Insurance & other Professional Services	20,954	12	170,887	5,343	92,599	5	2,052,039	112,945
Real Estate & Facilities Management	13,185	8	166,486	3,424	64,302	5	1,183,601	91,204
Government Services	7,980	15	54,687	2,605	94,735	5	1,780,058	223,796
Education	12,304	19	64,540	5,439	94,884	4	2,538,545	387,221
Health	9,776	19	52,370	3,398	101,986	5	2,004,436	219,765
Care	14,886	17	87,899	4,763	78,458	5	1,504,729	157,681
Whole economy	300,941	13	2,299,921	87,572	1,489,540	5	27,547,123	2,816,693

Bases: All establishments, all employees
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

CBSE&P analysis by nation shows that employers in Scotland and Wales are the most likely to be experiencing skill gaps (both 12 per cent) whereas employers in Northern Ireland were the least likely (five per cent). While the proportion of CBSE&P staff that lack proficiency is relatively consistent across the nations, employers in Northern Ireland were also the least likely to report employees with skills gaps (two per cent).

Table 5.12: Employers and employees with skill gaps by nation (CBSE&P)

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Employers with skills gaps	31,925	10	27,202	10	2,606	12	1,633	12	484	5
Employees with skills gaps	99,184	4	85,162	5	9,525	4	3,187	4	1,311	2
Employer weighted base	306,403		261,155		21,346		13,161		10,742	
Employer unweighted base	8,961		7,538		300		660		463	
Employment weighted base	2,235,270		1,826,590		249,158		91,003		68,519	
Employment unweighted base	150,111		119,856		14,453		10,713		5,089	

Bases: All establishments, all employees
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

The occupational profile of staff lacking proficiency in the UK CBSE&P sector is illustrated in Table 5.13 below.

In absolute numeric terms skilled trades are the most likely to have skills gaps, however as a share of employment, workers employed in what are traditionally described as unskilled or semi-skilled occupations (elementary positions) are the most likely to be described as lacking full proficiency, while those in more highly skilled occupational areas, such as managers and professionals, are the least likely to be described as having skills gaps. This analysis provides a very different picture to occupational skill deficiencies within the existing

workforce, as discussed earlier. Higher skilled occupations – managers, professionals, associate professionals and skilled trades have a significantly higher than average SSVs as a share of all vacancies (see Table 5.3).

Table 5.13: Skills gaps by occupation

	Total employment	Number with skills gaps	% with skills gaps
Managers	602,674	14,362	2
Professionals	219,849	8,790	4
Associate professionals	158,185	8,151	5
Administrative/clerical staff	274,587	12,358	5
Skilled trades occupations	567,580	29,121	5
Machine operatives	167,565	8,567	5
Elementary staff	167,640	11,172	7
Weighted base	2,235,270	99,184	4
Unweighted base	150,111	7,149	

Base: All employees
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

The most common causes of skill gaps; according to employers across the UK CBSE&P sector is that staff have only partially completed their training (50 per cent) and that they are new to the role (43 per cent). This hierarchy of causes is replicated across each of the nations.

When describing the skills lacking among their staff, CBSE&P UK employers generally focused on job specific skills; half of employees (50 per cent) described by their employers as lacking full proficiency were felt to lack these skills. Job specific skills gaps were considerably more concentrated in Northern Ireland (68 per cent) compared to the rest of the UK CBSE&P sector.

Seven in ten (71 per cent) UK CBSE&P sector employers with skills gaps reported an increase in workload for other staff as a consequence of having staff that are not fully proficient. While in some cases increased workload can be absorbed by other staff, some employers will need to pay for overtime or bring in agency staff to cover the work; over half of employers with skills gaps reported that they had led to increased operating costs (54 per cent). Difficulties in meeting quality standards or introducing new working practices had adverse impacts for around a third of employers reporting skill gaps (32 per cent and 36 per cent respectively).

Geographical analysis across the CBSE&P sector showed that whilst employers in each nation reported an increased workload and increased operating costs as the biggest

consequences of skill gaps, there was some variation between the impacts on other areas of the business, as shown in Table 5.14.

Table 5.14: Effects of skills gaps on employers within the CBSE&P sector by geography

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Increase workload for other staff	11,695	71	10,200	69	*	*	602	78	*	*
Increase operating costs	9,005	54	7,771	53	*	*	560	73	*	*
Have difficulties meeting quality standards	5,283	32	4,518	31	*	*	217	28	*	*
Have difficulties introducing new working practices	6,005	36	5,184	35	*	*	263	34	*	*
Lose business or orders to competitors	4,649	28	4,108	28	*	*	254	33	*	*
Delay developing new products or services	4,150	25	3,620	25	*	*	305	40	*	*
Outsource work	3,538	21	3,053	21	*	*	174	23	*	*
No particular problems / None of the above	1,788	11	1,658	11	*	*	70	9	*	*
Don't know	0	0	0	0	*	*	0	0	*	*
Weighted base	16,563		14,761		*		767		*	
Unweighted base	891		764		*		64		*	

Base: All employers with skills gaps that have impact on establishment performance
**Suppressed due to establishment base size <25 (<50 in Scotland)*
Column percentages sum to more than 100 since multiple responses were allowed.
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Approximately three-quarters (77 per cent) of all UK CBSE&P employers reporting skill gaps have responded to the skills deficiencies in their workforce by either increasing the amount of training they provide or increasing the amount they spend on training. Other common steps taken to improve the efficiency of staff involved more supervision of staff (53 per cent), the implementation of a mentoring scheme (41 per cent) and more staff appraisals (40 per cent). Only a small minority (three per cent) admitted to having done nothing to overcome skills gaps.

Table 5.15: Steps CBSE&P employers have taken to overcome skills gaps

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Increase training activity / spend or increase/expand trainee	17,312	77	15,132	80	219	69	1,041	48	919	91
More supervision of staff	11,856	53	10,228	54	119	37	1,030	48	480	47
More staff appraisals / performance reviews	9,055	40	7,589	40	108	34	1,166	54	192	19
Implementation of mentoring / buddying scheme	9,266	41	7,391	39	120	38	1,338	62	418	41
Reallocating work	7,338	33	6,433	34	98	31	547	25	261	26
Changing working practices	6,314	28	5,794	31	71	22	339	16	110	11
Increase recruitment activity / spend	2,768	12	2,403	13	47	15	198	9	119	12
Recruiting workers who are non-UK nationals	1,185	5	922	5	22	7	183	8	57	6
Other	301	1	301	2	0	0	0	0	0	0
Nothing	642	3	563	3	9	3	65	3	5	0
Don't know	58	**	51	0	0	0	0	0	7	1
Weighted base	*22,399*		*18,908*		*2,161*		*1,011*		*320*	
Unweighted base	*1,210*		*1,040*		*64*		*81*		*25*	

Base: All employers with skills gaps who have taken steps to improve the proficiency or skills of these staff, or have plans to do so
Treat figures for Scotland with caution due to small establishment base size of 50-99
***Denotes a figure greater than 0% but less than 0.5%.*
Column percentages sum to more than 100 since multiple responses were allowed.
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

The vast majority of CBSE&P employers across each nation were all likely to have taken steps to improve staff proficiency and skills, most significantly in Northern Ireland where no employer stated they had not taken steps to overcome skills gaps. Geographical variations in the type of measures put in place existed, most prominently in Wales, where employers

were more likely to implement the mentoring scheme (62 per cent) and in Northern Ireland whose employers tended to reallocate work (26 per cent) rather than provide more appraisals (26 per cent).

5.3 Extent of under-employment

Approximately four in ten employers (42 per cent) across the UK CBSE&P sector reported under-employment within their workforces, equating to 17 per cent of all employees being considered over qualified and over-skilled. Someone may be described as being over-qualified if the qualifications they have are higher than the qualifications someone needs to get into their job, while over-skilled refers to individuals having little opportunity to use their past experience, skill or abilities in their current job.

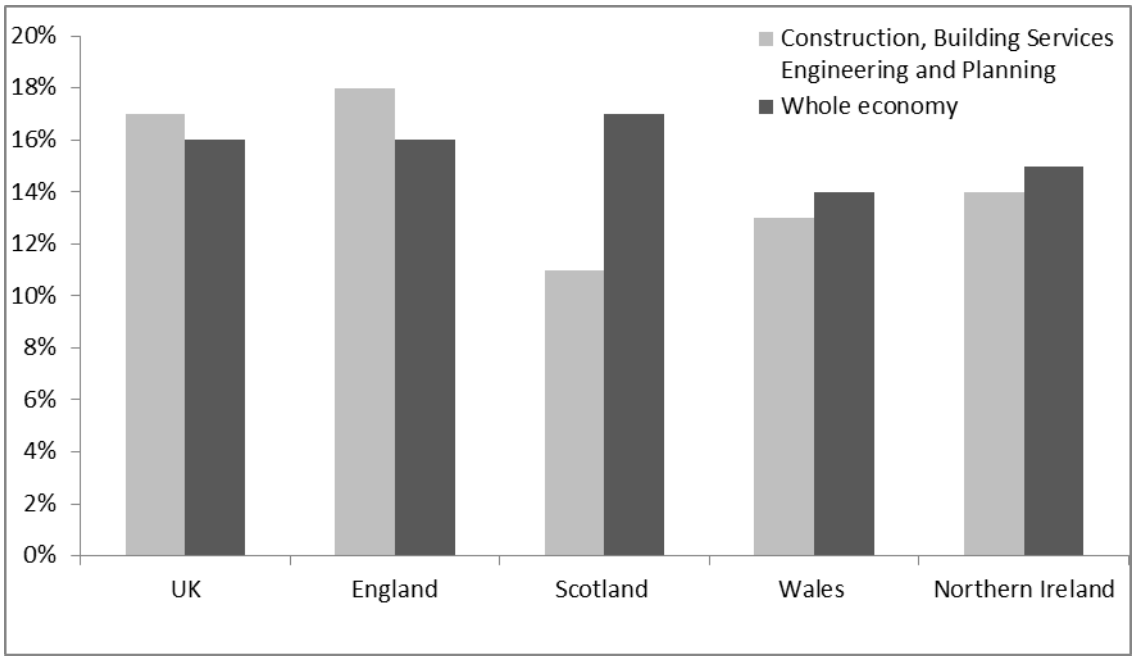
Table 5.16: Underemployment – The extent to which workforce is 'over qualified' and 'over skilled' by sector

	Employers with employees who are over qualified and over skilled				Employees who are over qualified and over skilled			
	Number	%	*Weighted base*	*Unweighted base*	Number	%	*Weighted base*	*Unweighted base*
Agriculture, Forestry & Fishing	42,111	38	110,220	1,547	88,613	19	466,870	19,506
Energy Production & Utilities	5,458	43	12,610	1,614	43,319	13	333,050	47,228
Manufacturing	56,009	43	130,709	7,776	252,633	10	2,541,188	291,593
Construction, Building Services Engineering and Planning	129,922	42	306,403	8,961	369,923	17	2,235,270	150,111
Wholesale & Retail Trade	241,146	51	470,200	16,150	846,216	18	4,674,684	514,820
Transportation and Storage	61,038	50	122,058	4,735	202,809	15	1,320,126	114,658
Hospitality, Tourism and Sport	131,526	60	220,055	11,318	566,562	24	2,313,487	258,524
Information and Communication Technologies	33,764	47	72,281	2,510	93,637	15	614,641	53,681
Creative Media & Entertainment	66,845	46	143,772	3,762	205,573	19	1,086,978	87,953
Financial, Insurance & other Professional Services	76,826	45	170,887	5,343	312,906	15	2,052,039	112,945
Real Estate & Facilities Management	81,744	49	166,486	3,424	217,791	18	1,183,601	91,204
Government Services	29,384	54	54,687	2,605	256,006	14	1,780,058	223,796
Education	34,623	54	64,540	5,439	341,455	13	2,538,545	387,221
Health	23,566	45	52,370	3,398	225,183	11	2,004,436	219,765
Care	47,114	54	87,899	4,763	258,385	17	1,504,729	157,681
Whole economy	1,118,691	49	2,299,921	87,572	4,456,192	16	27,547,123	2,816,693
Weighted base	2,299,921				27,547,123			
Unweighted base	87,572				2,816,693			

Bases: "Employers" columns based on all establishments; "employees" columns based on all employment.
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Compared to the extent of under-employment across the whole UK workforce, CBSE&P employers were less likely to report its existence than the national average (42 per cent v 49 per cent), however when asked to state how many of their employees were under-employed the results were more comparable (17 per cent v 16 per cent). By nation the findings are also similar with the exception of Scotland, where CBSE&P employers appear to have a lower amount of under-employment within their workforce, when compared to both the whole Scottish economy and across each nation of the CBSE&P sector, as illustrated in Figure 5.2.

Figure 5.2: Underemployment – The extent to which workforce is 'over qualified' and 'over skilled' by sector and nation



Base: All employment
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

5.4 Impact of mis-matches in terms of wages and migration

In general for the CBSE&P sector, the impact of mis-matches in terms of wages and migration does not appear to be significant at the moment, mainly because the sector is still coming to terms with the effect of the recession and there are challenging conditions for growth. Both wages and migration are discussed with emphasis given to trends from previous years, how the sub-sectors vary from the main sector and any differences apparent across the nations of the UK.

5.4.1 Wages

Table 5.17 shows the average hourly wage for the CBSE&P sector and how this compares to other sectors as well as the overall UK economy. Average wages in the sector are higher than the comparable all economy figure, however with a difference of between five and six per cent, the sector is comparable to the likes of Government services, Education and Manufacturing.

Table 5.17: Average hourly wage by sector (UK)

				Annual change	
	2008	2009	2010	2008 - 2009	2009-2010
	£	£	£	%	%
Financial, insurance & other professional services	21.06	21.45	21.99	1.8%	2.5%
Information and communication technologies	20.05	20.26	20.40	1.0%	0.7%
Creative media and entertainment	17.14	17.29	17.50	0.8%	1.2%
Energy production and utilities	15.93	16.41	16.62	3.0%	1.3%
Health	14.97	15.79	16.45	5.5%	4.2%
Education	14.67	15.39	15.71	4.9%	2.1%
Government services	14.40	14.87	15.62	3.3%	5.0%
Construction, building services, engineering and planning	14.66	15.29	15.39	4.3%	0.7%
Manufacturing	13.86	14.28	14.37	3.1%	0.6%
Transportation and storage	12.44	13.16	13.21	5.8%	0.4%
Real estate and facilities management	11.36	11.64	11.71	2.5%	0.6%
Wholesale and retail trade	11.00	11.27	11.36	2.5%	0.8%
Care	10.21	10.30	10.49	0.9%	1.9%
Agriculture, forestry and fishing	10.42	11.18	10.38	7.3%	-7.2%
Hospitality, tourism and sport	9.14	9.35	9.52	2.3%	1.8%
All economy	13.94	14.39	14.60	3.2%	1.5%

Source: Annual Survey of Hours and Earnings, 2010 (ONS)

Although sectors such as Education and Health have seen increases above the all economy figure from 2008 to 2010, growth in CBSE&P hourly wages has remained just below this level. This highlights the challenging operating conditions that the sector is facing with increased operating costs, very competitive tendering and reducing margins limiting wage rises.

Table 5.18 gives a breakdown of the average hourly wage by nation, although not by sector, which shows that wages in England are highest while those in Wales and Northern Ireland are lower. Hourly wages in Northern Ireland were the only nation to show a decrease in 2010, with a change of -0.7 per cent compared to a 1.5 per cent increase for the UK.

Table 5.18: Average hourly wage by nation (all sectors)

				Annual change	
	2008	2009	2010	2008-2009	2009-2010
	£	£	£	%	%
England	14.19	14.63	14.85	3.1%	1.5%
Scotland	13.05	13.61	13.88	4.3%	2.0%
Wales	12.13	12.48	12.68	2.9%	1.6%
Northern Ireland	12.06	12.59	12.50	4.4%	-0.7%
United Kingdom	13.94	14.39	14.60	3.2%	1.5%

Source: Annual Survey of Hours and Earnings, 2010 (ONS)

When looking in more detail at the sector using the 2-digit SIC sub-sector breakdown shown in Table 5.19, it is specialised construction activities that has the lowest average hourly wages, whereas the architect sub-sector has the highest. This difference across sub-sectors will be reflective of the nature of work, skill levels and general supply/demand forces than impact wages across all sectors.

Table 5.19: Average hourly wage by Sector - 2 digit SIC data (UK)

		2010
SIC07	Definition	£
41	Construction of buildings	16
42	Civil engineering	15
43	Specialised construction activities	13
71	Architects	18

Source: Annual Survey of Hours and Earnings, 2010 (ONS)

Table 5.19 shows that there is less variation in the average hourly wage within the CBSE&P sector (at only £5 per hour across the four sub-sectors), than other sectors such as energy production and utilities which has a much greater variation of £22 per hour across its sub-sectors.

Average hourly wages in the sector can be illustrated by looking at selected jobs identified in the Annual Survey of Hours and Earnings (2010) that would predominately be involved in work across the CBSE&P sector, and where there is sufficient data. This is shown in Table 5.20.

Table 5.20: Gross hourly pay by employee jobs – selected occupations (UK)

			Annual change	Employee percentile	
		Average	(2009-2010)	25%	75%
Description	SOC(2000)	£	%	£	£
Managers in construction	1122	22.58	2.70	14.46	26.68*
Civil engineers	2121	18.00	-2.20	13.41	22.04*
Electricians, electrical fitters	5241	13.94	3.10	11.35	15.96
Bricklayers, masons	5312	11.78	2.80	9.70	12.69*
Plumbers, heating and ventilating engineers	5314	13.51	1.80	10.72	15.54
Carpenters and joiners	5315	11.32	-0.20	9.36	12.73
Painters and decorators	5323	11.10	3.30	9.27	11.97*
Labourers in building and woodworking trades	9121	9.49	1.60	7.19	10.54

Source: Annual Survey of Hours and Earnings, 2010 (ONS)
*Note: * indicates figures with a coefficient of variation (CV) of > 5% and <=10%. All other figures have a CV of >5%*

With this list of jobs there is noticeable variation in the average salary, changes that have occurred between 2009 and 2010, and differences between the upper and lower ends of the scales.

It is not unexpected that labourers have the lowest average gross hourly pay, while managers in construction have the highest, however of the eight jobs listed, which cover some of the main employment numbers in the sector, only two are above the sector average of £15.39.

When looking at the annual change in gross hourly pay from 2009 to 2010, civil engineers and carpenters and joiners both showed a decline in average gross hourly pay, while managers in construction, electricians, bricklayers and painters and decorators all increased. For some jobs this increase was more than double the all economy figure of 1.5 per cent and noticeably more than the sector figure of 0.7 per cent.

The variation between the upper and lower ends of the hourly rates is illustrated by the difference in rates between employees in the lower 25 per cent of the range against those in the upper 25 per cent. For jobs such as labourers, painters and decorators, bricklayers and carpenters, the variation is around +/- 25 to 35 per cent of the average hourly rate, while for civil engineers and managers in construction this variation increases to around +/- 50 per cent of average hourly pay.

These details highlight that although the sector and sub-sector wages illustrate general trends and allow comparisons to be made with other sectors, the dynamics of wages at employee levels can show significant variations. It should also be noted that the sector has wage rate agreements between employers and union bodies which influence hourly rates and at the time of writing, these rates have not yet been agreed between employers and unions in the Building Services Engineering sub-sector.

5.4.2 Migration

Construction, Building Services Engineering and, to a slightly lesser extent, Planning work has always involved a level of migration as there is an expectation that people will go where the work is located. This applies to foreign nationals entering the UK labour market, UK citizens finding work abroad and flows of people within the UK itself. This flow of labour means that while the sector has exported the skills and expertise of the UK CBSE&P workforce, it has also benefited from the migration of foreign nationals. The current view of employment by country of birth across different sectors of the UK economy is shown in Table 5.21. Around five per cent of CBSE&P employment comes from the Rest of Europe (EU27), which is on a par with the level seen across all sectors. The percentage of the workforce coming from the Rest of the World is also around five per cent; however this is slightly lower than the corresponding figure across all sectors of nine per cent.

Table 5.21: Employment by country of birth and sector, UK (2010)

	UK	Rest of Europe (EU 27)	Rest of world	Total	UK	Rest of Europe (EU 27)	Rest of world	Total
	'000	'000	'000	'000	%	%	%	%
Agriculture, forestry and fishing	377	21	8	406	93	5	2	100
Energy production and utilities	431	15	26	472	91	3	6	100
Manufacturing	2,567	210	193	2,969	86	7	6	100
Construction, building services, engineering and planning	2,446	124	126	2,696	91	5	5	100
Wholesale and retail trade	3,644	177	318	4,140	88	4	8	100
Transportation and storage	1,213	77	158	1,448	84	5	11	100
Hospitality, tourism and sport	1,630	156	260	2,046	80	8	13	100
Information and communication technologies	640	33	88	761	84	4	12	100
Creative media and entertainment	850	51	87	987	86	5	9	100
Financial, insurance & other professional services	1,719	79	202	2,001	86	4	10	100
Real estate and facilities management	808	55	114	978	83	6	12	100
Government services	2,011	46	152	2,208	91	2	7	100
Education	2,769	106	213	3,088	90	3	7	100
Health	1,737	83	266	2,086	83	4	13	100
Care	1,490	65	174	1,729	86	4	10	100
Other sectors	722	43	71	836	86	5	9	100
All economy	25,054	1,340	2,457	28,851	87	5	9	100

Source: Labour Force Survey 2010, ONS

Looking across the four nations, Table 5.22 shows that the levels of non-UK employment across all sectors is slightly lower in Scotland and Wales, for workers coming from either the Rest of Europe (EU27) and Rest of the World. In Northern Ireland, it is workers coming from the Rest of the World that make up a significantly lower level of employment with only two per cent compared to the all sector figure of nine per cent.

Table 5.22: Employment by country of birth and nation, 2010

	UK		England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%	000s	%
UK	25,054	87	20,856	86	2,264	93	1,228	94	706	92
Rest of Europe (EU 27)	1,340	5	1,176	5	85	3	37	3	42	5
Rest of world	2,457	9	2,295	9	96	4	47	4	18	2
Total	28,851	100	24,327	100	2,446	100	1,312	100	766	100
Unweighted base	194.426		161.480		17.022		8.693		7.231	

Source: Labour Force Survey 2010, ONS

In terms of breakdown across the main sub-sectors, as defined by 2 digit SIC(2007) definitions, Table 5.23 shows that the levels of EU 27 and Rest of the World employment in the workforce is between four and six per cent in sub-sectors SIC 41, 42 and 43. Sub-sector SIC 71, Architects shows a slightly higher level of employment from Rest of the World, which is reflective of work in this sub-sector as the UK has world renowned employers in this sub-sector who operate on an increasingly global scale.

Table 5.23: Sub-sector employment by country of birth and nation, 2010

SIC07	Definition	UK	Rest of Europe (EU 27)	Rest of world	Total	UK	Rest of Europe (EU 27)	Rest of world	Total
		'000	'000	'000	'000	%	%	%	%
41	Construction of buildings	724	45	37	805	90%	6%	5%	100%
42	Civil engineering	260	11	12	283	92%	4%	4%	100%
43	Specialised construction activities	1049	42	41	1132	93%	4%	4%	100%
71	Architects	414	25	36	475	87%	5%	8%	100%

Source: Labour Force Survey 2010, ONS

These details illustrate that, apart from some small differences, the sector is currently broadly comparable to the wider workforce with regard to levels of non-UK national employment. However as Table 5.24 shows, from 2002 through to 2009 there was growth in the employment of non-UK nationals within the CBSE&P sector, with an overall increase in numbers of around 160,000. This period was one of sustained growth for the sector, with overall employment increasing by 650,000 before the effects of the recession began to be felt and employment dropping in 2010.

Table 5.24: Employment by country of birth – Construction, Building Services Engineering & Planning sector from 2002 – 2010.

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	'000	'000	'000	'000	'000	'000	'000	'000	'000
UK	2,103	2,207	2,280	2,335	2,364	2,392	2,391	2,593	2,446
Rest of Europe (EU 27)	55	50	66	70	87	116	141	144	124
Rest of world	65	76	88	95	108	106	107	136	126
Total	2,223	2,333	2,434	2,500	2,560	2,613	2,638	2,873	2,696
Unweighted base	19.570	19.587	19.631	19.517	19.234	19.368	19.102	19.911	17.924

Source: Labour Force Survey 2010, ONS

While general economic prosperity would have been one of the drivers behind the increase in employment for both UK and non-UK nationals, occupational skills shortages were also recognised as a driver behind the increased levels of non-UK national employment.

Table 5.25 expresses these figures as a percentage of the total workforce in each year, and compares this to the all sectors figures. In 2002 95 per cent of the CBSE&P sector workforce was UK nationals compared to 91 per cent for all sectors, and by 2009 these figures were 90 per cent and 87 per cent respectively. This shows that in recent years there has been a higher rate of inward migration in the sector when compared to the all sector rate of increase.

Table 5.25: Employment by country of birth – Construction, Building Services Engineering & Planning sector and All sectors from 2002 – 2010.

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Construction, building services, engineering and planning									
UK	95%	95%	94%	93%	92%	92%	91%	90%	91%
Rest of Europe (EU 27)	2%	2%	3%	3%	3%	4%	5%	5%	5%
Rest of world	3%	3%	4%	4%	4%	4%	4%	5%	5%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
All Sectors									
UK	91%	91%	91%	90%	89%	88%	87%	87%	87%
Rest of Europe (EU 27)	3%	3%	3%	3%	3%	4%	4%	4%	5%
Rest of world	6%	6%	7%	7%	8%	8%	8%	8%	9%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Labour Force Survey 2010, ONS

Until the recession increasing demand for building opened up job opportunities for economic migrants and the prospect of continuous work made the sector an attractive proposition, particularly for transient and unattached workers. Consequently the CBSE&P sector has witnessed an increase in the use of migrant labour to fill temporary and emerging labour gaps. This process intensified with the expansion of the EU; however as the levels of employment from the Rest of the World shows, it was by no means limited to EU citizens.

Tables 5.24 & 5.25 also show that in 2010 there was a general drop in employment across the sector and that from 2009 to 2010 the levels of non-UK nationals in the sector has remained static. In part this will be due to the recessionary effects that have impacted across the sector, which have made the UK less attractive when compared to previous years of continuous growth, however there have also been changes in how immigration from outside the EU is handled that are having an effect.

As the Migration Advisory Committee (MAC) notes (MAC 2011), the UK labour market is recovering from the recession and there have been significant changes in immigration with the Tier 2 route intensifying its selectivity and being limited in numbers. The changes in the Tier 2 route came into effect from April 2011 and the current MAC recommended shortage occupation list covers quite specific job titles within the official occupational classifications that are skilled to National Qualification Framework (NQF) level 4 or above.

For the CBSE&P sector, this combination of recession and increasing selectivity on the MAC recommended shortage occupation list means that for the sector there are no shortages identified across the range of main occupational classifications. There are some specific job titles that are identified as a shortage such as, tunnelling engineer, geotechnical engineer, geoenvironmental engineer and, high integrity pipe welder with at least three years' experience. As these are very specific skills for niche occupations that can be applied over

a number of sectors, the MAC (2011) indicates very little migration from outside the EU at the moment in CBSE&P.

While the MAC recommended shortage list covers the UK, there is also a list published for Scotland. Although having a level of devolved government power, the general economic and recessionary pressures in Scotland have been similar to that of the UK and the labour market is facing similar challenges. For the CBSE&P sector in Scotland the view mirrors that of the UK in terms of shortage occupations.

The view from looking at the tables on employment by nationality and from the current MAC list is reflected in research carried out by Sector Skills Councils that support the CBSE&P sector. In building engineering services, recent research carried out by SummitSkills (2011) shows that there has been an overall decline in employment of migrant labour between 2008 and 2011. However within subsets of building engineering services there has been an increase in migrant labour within electrotechnical and plumbing industries, while air conditioning and refrigeration industries and the heating and ventilation industries have shown a reduction in levels of migrant workers.

5.5 Extent to which skills deficiencies are hampering growth

At the moment it is general economic conditions and business environment that are having the main impact upon hampering growth in the sector. As noted earlier, the sector has seen a decline in output and employment in recent years, which when combined with uncertainty about the rate of future growth, results in fragile confidence for the sector as a whole.

Low sector growth rates and failing employment levels are reflected in the wages and migration details set out in Section 5.4 which show that the sector is not experiencing significant mis-matches in either of these areas. Wage growth is lower than the all economy average figure, while migration levels in the workforce are static and no occupations are identified on the MAC list.

When looking at vacancy levels, recruitment of young people, retention of people within the workplace and underemployment, again the sector is performing in line with the general economy and does not appear to be experiencing any pressures in these areas.

There does however look to be a mis-match when it comes to hard-to-fill and skill-shortage vacancies within the sector, with levels in both of these areas higher when compared to other sectors, ref Table 5.1. This points to a small number of vacancies being difficult to fill for which the reason is mainly a lack of job specific, technical or practical skills.

Earlier, Tables 5.9 and 5.14 show the impact that these hard-to-fill vacancy and skill gaps are having on businesses within the sector and Tables 5.26 and 5.27 below highlight the main differences when comparing the sector specific details to the corresponding whole economy details.

The sector is comparable to the overall economy in that having hard-to-fill vacancies increases the workload for other staff; however for the sector there is more of an impact reported in relation to losing business to competitors, increasing costs and outsourcing of work.

Outsourcing of work is a definite feature of the sector which has extended main contractor, sub-contractor supply chains, while increased competition for work has been evident in employer feedback received by sector skills councils.

At a time when conditions are challenging, any impact that increases costs or reduces competitive advantage would therefore hamper growth, and this does seem to be occurring for employers that report a hard-to-fill vacancy and/or a skills gap.

Table 5.26: Impact of having hard-to-fill vacancies, whole economy compared to Construction, Building Services Engineering & Planning (CBSE&P) sector

	UK All economy		UK CBSE & P Sector		All economy - Sector Difference
	Number	%	Number	%	% points
Increase workload for other staff	75,165	83	9,509	82	-1
Have difficulties meeting customer services objectives	40,550	45	4,820	42	-3
Lose business or orders to competitors	**37,879**	**42**	**5,741**	**50**	**8**
Delay developing new products or services	37,635	41	5,119	44	3
Experience increased operating costs	**35,766**	**39**	**5,827**	**50**	**11**
Have difficulties meeting quality standards	30,498	34	3,353	29	-5
Have difficulties introducing new working practices	29,065	32	2,816	24	-8
Outsource work	**23,666**	**26**	**4,149**	**36**	**10**
Withdraw from offering certain products or services altog	23,180	26	3,268	28	2
Have difficulties introducing technological change	19,905	22	2,362	20	-2
None	5,476	6	484	4	-2
Don't know	361	**	35	**	
Weighted base	90,770		11,596		
Unweighted base	5,160		468		

Base: All employers with hard to fill vacancies
*** Denotes a figures of greater than 0% but less than 0.5%*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

Table 5.27: Consequences of skills gaps, whole economy compared to Construction, Building Services Engineering & Planning (CBSE&P) sector

	UK All economy		UK CBSE & P Sector		All economy - Sector diference
	Number	%	Number	%	% points
Increase workload for other staff	144,234	78	11,695	71	-7
Increase operating costs	**82,833**	**45**	**9,005**	**54**	**9**
Have difficulties meeting quality standards	74,405	40	5,283	32	-8
Have difficulties introducing new working practices	70,317	38	6,005	36	-2
Lose business or orders to competitors	59,139	32	4,649	28	-4
Delay developing new products or services	46,767	25	4,150	25	0
Outsource work	28,173	15	3,538	21	6
No particular problems / None of the above	14,285	8	1,788	11	3
Don't know	344	**	0	0	
Weighted base	184,733		16,563		
Unweighted base	12,943		891		

Base: All employers with skills gaps that have impact on establishment performance
*** Denotes a figures of greater than 0% but less than 0.5%*
Source: UK Commission's Employer Skills Survey 2011 (Davies et al, 2012)

When looking to overcome skills gaps, sector employers have increased the amount of training provided, increased the amount spent on training, implemented a mentoring scheme or undertaken more supervision of staff. This is similar to how skills gaps have been overcome across all sectors, however for the CBDE&P sector there are some differences when looking at steps taken at a national level with employers in Wales noting a reduction in training spend.

Although skills deficiencies do not appear to be significantly hampering growth in the sector at the moment, this position could change. If there was a stronger than expected recovery in macro-economic conditions this would lead to increased employment demand, which in turn would impact upon vacancies, wages and migration, putting constraints on the sector's own performance and growth.

6 Drivers of change and their skills implications

Chapter Summary

- This chapter discusses the main drivers of change in the Construction, Building Services Engineering, and Planning industry, and what impact these changes may have on the demand for employment and skills.
- The drivers that will have the greatest impact on the sector are the economic downturn, Government policies for the environment, and increasing use of off-site manufacturing.
- The skills required for surviving tough economic conditions are different to those needed when the economy is performing well. There is a benefit for businesses and employees to be multi-skilled so that they operate across several sectors and occupations.
- When the economy returns to growth a priority for the industry will be to recover the large swathe of skills which have been lost as a result of the recession.
- 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.
- Low carbon skills will have to be fully embedded into the sector. At present few companies in the non-domestic sector are able to deliver zero-carbon properties.
- CBSE&P professionals will have to learn how to account for carbon using principles normally associated with accountants and economists such as discount rates which are generally used with reference to financial cost.
- The widespread adoption of Building Information Modelling and Management (BIM) could bring about increased collaborative working, thereby driving greater innovation and efficient working.
- For professional services off-site manufacture of components will require increased need for CAD/CAM trained building technicians to work on off-site design and application in factory conditions.

6.1 Drivers of change

The UK is currently experiencing one of the fastest paces of economic and social change in modern times, with the economic downturn, growing environmental concerns, a globalised workforce, and technological advances working together to bring this about. This chapter looks at how these factors will change the Construction, Building Services Engineering and Planning sector, and provides an overview of the implications these may have for both employment and skills. It follows the format of the National Strategic Skills Audit in taking a structured view of the areas in which change will occur covering politics, economics, the environment, society, technology, and demography. The purpose is to indicate the nature and direction of major types of change, and provide a broad analysis of how they may influence skills demand and supply within the CBSE&P sector.

Figure 6.1 illustrates the seven main drivers for skills change. These can briefly be summarised as:

i. Regulation and Governance: While national and devolved legislation and regulation can influence skills demand and supply in many ways, for example by setting education requirements, codifying training, product or service standards, and regulating procurement processes, it is presently of particular importance in setting the pace of the 'Green Agenda'.

ii. Demographic and population change: covers changes in the age profile of populations and the effects of migration.

iii. Environmental change: for the CBSE&P sector this is specifically about climate change and minimising the emission of Green House gases; the primary driver here will be the Green Deal.

iv. Economics: including rate of overall economic growth, particularly in response to the Coalitions package of 'Austerity Measures', and the on-going unwillingness of banks to lend to small businesses.

v. Technological change: primarily through greater use of off-site development and manufacturing of components. The development of technologies may also create demands for skills at higher levels in research and development (R&D), and at lower levels in manufacturing new products.

vi. Changing values: this will include attitudes to work and may therefore affect labour supply through influencing perceptions about the image and conditions of work within the Construction, Building Engineering Services, and Planning sector.

vii. Changing consumer demand: in the CBSE&P sector this is most likely to manifest itself in competitive tendering and the requirements of large public sector clients for framework agreements with contractors.

Figure 6.1: The seven key drivers of skills change

Source: National Strategic Skills Audit

There will inevitably be considerable overlap between some of these drivers, for example environmental initiatives will be driven both by rising energy prices (economic), technological breakthroughs (technology), and primarily by Government initiatives (regulation and governance). Where such overlaps occur it could be said that the drivers, by reinforcing one another, will have greater impact.

6.2 Scale of different drivers

Taking each of the above mentioned factors in turn, the remainder of this chapter will examine what the change is, and what its implications might be for skills in the Construction, Building Services Engineering, and Planning Sector. Where multiple drivers reinforce the same change in employment and skills, then they are discussed together to avoid repetition.

6.2.1 Regulation and Multi-level Governance Including Environmental Change

The growing awareness of the impact that the built environment has upon the environment means that its activities are becoming increasingly governed by legislation - primarily concerning the implementation of low and zero carbon targets. Consequently, these drivers are reviewed together.

Table 6.1 – Main Government Strategies for Addressing Energy Efficiency

Strategies	Details
The Green Deal	The Energy Act 2011 includes provisions for the new 'Green Deal', which aims to reduce carbon emissions by improving the energy efficiency of Buildings
Building Regulations	Changes to part L (energy efficiency) came into effect in England in October 2010. They will be further reviewed in 2013 and 2016, in line with the energy requirements of the Code for Sustainable Homes.
Code for Sustainable Homes	Sets new standards for energy efficiency (above those in current building regulations) and sustainability which are not mandatory under current building regulations but represent important developments towards limiting the environmental impact of housing.
Climate Change Planning Policy Statement	Puts climate change at the centre of what Government expects from good planning. The PPS is underpinned by the Planning Act which places a duty on local planning authorities to take action on climate change. This includes Spatial Planning to minimise the emission of greenhouse gases through the location, scale, mix and character of development.

Strategies	Details
European Performance of Buildings Directive (EPBD)	A number of measures have been introduced in England and Wales to improve the energy efficiency of buildings, including; domestic energy assessors; commercial energy assessors; air conditioning inspectors, display energy certificate providers and on-construction domestic energy assessors.
Energy Performance Certificates (EPC)	Part of the now defunct Home Information Packs (HIPs) an EPC is still required for properties to be sold or rented.
Warm Front	Providing insulation and heating improvements
Carbon Emissions Reduction Target (CERT)	Extended to December 2012. The CERT initiative means that 68 per cent of the work must be met through professionally installed loft, cavity and solid wall insulation with the inclusion of DIY. Now 80 per cent of the obligation will be met through improved insulation and 15 per cent 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 ends.

According to the Strategy for Sustainable Construction (Department for Business, Innovation and Skills, 2008) the anticipated outcomes of the policy directives listed in Table 6.1 are that all new homes should be zero carbon by 2016, while public sector non-domestic buildings should be zero carbon from 2018, and remaining non-domestic buildings from 2019. Increased levels of energy efficiency will be embedded through Building Regulations and the Code for Sustainable Homes although the latter does not apply to Scotland. In order to achieve this by 2020 the report ‘Mind the Gap: Skills for the Transition to a Low Carbon Economy’, (Aldersgate Group, 2009) stated that “low carbon skills will have to be fully embedded into the mainstream UK economy.”

A recent survey by the Royal Institute of Chartered Surveyors: Global Zero Carbon Capacity Index (RICS, 2011) found the UK was in the top three countries in the world (out of 34 industrialised countries measured) in terms of working toward zero carbon in the built environment (just behind Norway and Brazil). Despite this the Government's targets still present a major challenge to the CBSE&P sector, the scale of which is outlined by the findings from the Employer Panel: Employer Attitudes and Motivations to Learning and Training (Wave 10), (ConstructionSkills, 2010). This research found that few companies in the non-domestic construction sector are currently able to deliver zero-carbon properties, indeed 51 per cent of respondents stated that they had low or very low knowledge of low carbon legislation and directives. As this awareness grows there will be considerable demand for even comparatively basic skills in low and zero carbon technologies and green products.

Just what these skills are is discussed in the report 'Building a low-carbon economy – the UK's innovation challenge' (Committee on Climate Change, 2010) which states that "A combination of improved energy efficiency through insulation and increased penetration of renewable heat, particularly but not solely from heat pumps, will be required to cut emissions from buildings in the next decades. Most insulation materials and renewable heat technologies are reasonably mature technologies, but have not been deployed at a large scale in a UK context."

It is the retrofitting of existing building stock which poses the greatest challenge to the industry. UK legislation developed in response to the climate change agenda includes the Energy Act 2011 and its provisions for the forthcoming Green Deal, which aims to reduce carbon emissions through improvements to the energy efficiency of British properties. The Green Deal is the Coalition Government's flagship policy for improving the energy efficiency of buildings in Great Britain and will be available from autumn 2012. It will establish a new financial mechanism that will allow a range of measures, such as insulation, heating or lighting, to be installed in people's homes and businesses at no upfront cost. From the autumn of 2012, providers will be able to offer customers a Green Deal pay as you save plan, which will enable them to secure finance for the installation of measures to support energy efficiency - such as insulation, new forms of heating or lighting systems or other developments as new technologies emerge.

Accredited Green Deal advisors will identify the changes required to support the transition to more energy efficient buildings, whereupon accredited installers will undertake the work. To ensure that real savings can be made, the energy saving measures recommended for properties will need to be both appropriate to the age and construction of the property and

correctly installed. Clearly therefore, a competent property assessment and installation workforce is essential for the success of the Green Deal.

Recent research commissioned by the Green Deal Skills Alliance: 'Research to support the development of a Green Deal Competence Framework' (Green Deal Skills Alliance, 2012) revealed that the majority of employers within the CBSE&P sector consider that the existing workforce will – for the most part – need to enhance current skill levels, rather than acquire brand new skills. To a large extent, respondents believe the emphasis within training will need to be on the application of existing skills within the context of Green Deal – making the acquisition of relevant knowledge a high priority.

Skills required to implement the Green Deal will be a mix of technical skills – such as physical installation of measures – combined with softer skills around customer service and engagement. In particular the role of the energy assessor will require skills to carry out a comprehensive and effective property assessment as well as the communication style to be able to explain to and advise the customer on the most effective solutions. Understanding the customer journey will enable the workforce to offer appropriate quality of customer service.

Specific skills needs have been identified as:

- Health & safety – notably personal protection, working at heights and dealing with asbestos found in buildings
- Basic skills – literacy, numeracy and ICT
- Customer service and customer care
- Assessment/surveying of building fabric performance in relation to estimated energy and costs savings, and identification of the most effective solution for different building fabrics and ages
- Installation – of solar, ground and air source heat pumps, biomass heating systems and insulation of all types (particularly in the context of needs of different building fabrics/ages)
- Maintenance of energy efficiency measures once installed
- Use of software required in property assessment, and estimation of cost/energy savings
- Project management and estimating skills to schedule and complete projects to time and budget

- Calculation of realistic predictions of energy/cost savings and reduction in carbon emissions for different types of building fabric/age dependent on energy efficiency measure installed.

In addition to the new regulations coming into force it will also require research and development for new technologies, investment, and willingness on the part of the CBSE&P sector to embrace change. The payback for this willingness would be in the form of job creation – it has been forecast in 'Meeting the Low Carbon Skills Challenge: A Consultation on Equipping People with the Skills to take Advantage of Opportunities in the Low Carbon and Resource Efficient Economy', (Department for Business, Innovation and Skills & Department of Energy and Climate Change, 2010) that providing retrofit installation and advice services to the domestic sector could create up to 65,000 jobs in the UK over the next 40 years.

Meeting the Government's targets will also require an increase in infrastructure projects, specifically new nuclear power stations and both tidal and wind energy infrastructure. The report 'Towards a Low Carbon Economy – economic analysis and evidence for a low carbon industrial strategy', (Department for Business, Innovation and Skills, 2009) forecast that achieving this will require the industry to apply existing skills and knowledge to new types of building (e.g. new nuclear generation plants potentially to start coming online by 2017).

More local renewable and local low-carbon sources of energy will be key to delivering the Government's targets. Local energy will include both micro-generation serving individual buildings, and community level schemes such as combined heat and power. The approach set out in the Climate Change PPS is intended to help make the most of opportunities for decentralised and renewable or low-carbon energy. The skills needed to deliver this are Energy management, Energy efficiency, Energy advice and support for carbon reduction measures, Sustainable use of resources, Renewable energy, Sustainable procurement, Knowledge of funding and financial inclusion, Customer service skills, Keeping up to date with legislation, Management and leadership skills (coaching and supporting staff, problem solving, engaging and involving staff).

For professional services the impact of many of these legislative changes will be felt at the design and planning stage by the likes of architects, planners and assessors. Plans and designs for developments would need to take into account relevant changes in building regulations as well as incorporating adaptations to build methods for improved energy efficiency, requiring skills in interpreting legislation, knowledge of modern materials and methods for their use.

A 2009 Press Release from Atkins Global (www.atkinsglobal.com/en/media-centre/news-releases/2009/2009-07-23) makes the point that engineers, architects and surveyors will have to learn how to account for carbon using principles normally associated with accountants and economists such as discount rates which are generally used with reference to financial cost.

6.2.2 Economics and Globalisation

By far the biggest impact upon construction will be felt from fluctuations in the wider economy, primarily the on-going effects of the recent recession, and the possibility of another in early 2012. The recession brought with it massive job losses to the CBSE&P sector, and despite officially ending in the fourth quarter of 2009 the onset of economic recovery did not mark a recovery in employment. A priority for the industry in the medium-term, therefore, will be to recover the large swathe of basic occupational 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, so called Modern Methods of Construction (MMC) 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, especially amongst small businesses.

So what are the implications of the continued economic uncertainty for skills in the sector? Research carried out in 2009 'The Impact of the Recession on Construction Professionals – A View from the Front Line', (Construction Industry Council & ConstructionSkills, 2009), examined how construction firms were coping with the recession. While the focus of the survey was on Professional Services, one particular conclusion was pertinent for the whole sector 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. The report 'Understanding Productivity in the Construction Industry', (ConstructionSkills, unpublished) suggests 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 in the CBSE&P sector.

Further analysis of the challenges thrown up by the economic downturn is highlighted in the research 'Understanding Future Change in Construction' (ConstructionSkills 2010). Successful planning was mentioned by many employers in the survey as an area of difficulty in times of economic uncertainty. 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 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 2000s.

The economic impact of the recession upon the Professional Services sector has been as significant, if not more so, than in the contracting sector, although it has attracted less media attention. According to the survey of professional practices by the Construction Industry Council (CIC) & ConstructionSkills already cited, 46 per cent of professional practices had made redundancies since the onset of the recession, a figure backed up by claimant count data from the ONS, which saw a 400 per cent rise for construction professionals between November 2007 and November 2009.

While there is also evidence of significant 'underemployment' among professionals – the CIC & ConstructionSkills Research survey indicated that 27 per cent of firms had resorted to shorter working hours – there is a risk that a return to growth in the industry will see a shortage of management and professional skills in the workforce.

In the longer-term, professional practices will have to work hard to overcome the damage that has been done to the image of job security. Should this lead to fewer undergraduates applying for degree courses, then deep-seated and systemic skills shortages may develop leading to spikes in wage levels.

6.2.3 Technological Change

Although there are many new and innovative trends in the building process, so called Modern Methods of Construction, the one that is likely to have the biggest impact on skills is off-site manufacture of components that are later installed on site. Although innovation has not been a key aspect of the industry in previous years, it is suggested in '2020 Vision: The Future of UK Construction' (Experian and SAMI Consulting, 2008) that this could be improved by 'greater internationalism, greater competition, and greater integration in the supply chain'. Also, as one of its benefits is increased energy efficiency, it is likely that its use will become more widespread as Environmental and Sustainability Legislation becomes more stringent.

According to The Callcutt Review of Housebuilding and Delivery (Department for Communities & Local Government, 2007),' some 70 per cent 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 per cent, the majority of which were timber frame or light metal frame. In the short to medium-term, the impact of technological change 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 per cent of all construction activity is manufactured offsite and this requires on-going skills links with the manufacturing sector. The implications for site-based skills arising from off-site manufacture could be significant over the period to 2020, but there are limits to its application. The CBSE&P sector covers 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.

Off-site manufacturing of components is not widely considered to have a very significant effect on the repair and maintenance market, which accounts for over 40 per cent of the sectors output, and in employment terms, around 60-70 per cent 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, off-site manufacture of components 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 off-site manufacture is used the main implications 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 manufacture will involve a very substantial shift of building skills from building sites to a factory environment. 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 skill needs 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.

For professional services, in addition to this an understanding of how new components will operate over the life time of a building, off-site manufacture of components 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.

At the forefront of collaborative working and industry innovation is Building Information Modelling and Management (BIM). BIM is defined in the Strategy Paper for the Government Construction Client Group (BIS, 2011) as the 'digital representation of physical and functional characteristics of a facility creating a shared knowledge resource for information about it forming a reliable basis for decisions during its life cycle, from earliest conception to demolition.' The report also stated that "BIM has the greatest potential to transform the habits and eventually the structure of the industry." BIM is seen as the biggest behavioural change to occur within the construction industry and was hinted at in Latham's Report, Constructing the Team (Latham, 1994) and Egan's Report, Rethinking Construction (Egan, 1998). Latham's aspiration was to see a 30 per cent improvement in productivity.

BIM could enable a completely collaborative approach whereby the whole design and construction process can be shared using a single electronic ‘model’ of the development. This will necessitate a significant culture change in the industry and drive it towards a long-sought industry target of integrated and inter-disciplinary working and increased efficiency and productivity across the industry.

The implementation of BIM received a significant boost with the publication of the Government's Construction Strategy (Cabinet Office, 2011), which sets out a move towards the mandatory use of BIM in public sector projects. The strategy sets out a requirement that projects must use BIM Level 2 by 2016. This level equates to providing fully collaborative 3D BIM, but the key advantages at project implementation stage flow from the ability to model 4D (time) , 5D (cost) and beyond.

The momentum towards BIM has certainly been increasing over the last 12 months and the tipping point is not too far away for model based processes becoming the norm. It is anticipated that the uptake of BIM will follow a similar growth arch of CAD/CAM only over a much shorter timeframe. Indeed, the benefits of BIM in terms of enabling maximum efficiency in use of materials and efficient build-ability, and thus underpinning increased competitiveness means that it will ultimately become as commonplace as CAD/CAM.

There will also be increased need for CAD/CAM 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.

6.2.4 Demographic Change and Values and Identities

Changes in values and identity are partly driven by demographic changes, including increased female and older worker participation in the labour market, so they will be reviewed together in this report.

Like many sectors within the UK economy, the CBSE&P sector has an ageing workforce, and in future employers will have to adapt to this to an even greater extent than at present. A recent Chartered Institute of Personnel and Development survey, Employee Outlook: focuses on the ageing workforce (CIPD, 2010) has found that 41 per cent of employees plan to work beyond the state retirement age. Among those employees, the survey found that financial reasons, people’s needs and aspirations to continue using their skills and experience, benefits from social interaction in the workplace and self-esteem were the main reasons why people planned to work beyond their normal retirement age.

Evidence presented already in this report shows that women make up only a small proportion of all workers in the CBSE&P sector, and a tiny proportion of workers in the manual trades. Based on historic trends this pattern is unlikely to change in the foreseeable future.

From the above analysis the skills implications of demographic change and values and identities are: greater requirement for measures addressing equal opportunities, managers who are more able to manage an ageing workforce, greater emphasis on firms retaining and attracting staff, and a general move to more flexible ways of working.

6.2.5 Consumer demand

Many of the changes outlined in this section are likely to translate into Local Authority contractual requirements - meaning that procurement processes are expected to become another important driver for skills demand as companies will have no choice but to respond. Already pre-qualification questionnaires (PQQs) are placing increased importance on environmental and sustainability policies held by tendering organisations; as well as quality standards and experience and skills relating to specific materials and processes, including waste management. Changes to procurement processes are therefore expected to act as a conduit for businesses to drive through changes within their organisation in order to adapt and survive in a competitive market.

Over the medium to longer-term, procurement requirements are expected to become even more stringent for all parts of the sector – in part led by regulations introduced by the EU. This will have a particularly strong impact on SMEs, as the costs and time incurred to pass through PQQ stage, even for relatively small contracts, are continually increasing.

In order to demonstrate compliance with regulations at both pre-qualification and building stages there will be a greater need for recording and documentation of processes and materials. This in turn will require additional written, communication, and presentational skills and may even require an understanding of addressing legal requirements and contractual skills which may be costly and time consuming for SMEs who will have to achieve this in addition to their day to day operations.

Amongst large clients the recession is driving moves towards reducing costs, which in the CBSE&P sector means a move towards standardisation and design and building repeatability.

Finally, the importance of good interpersonal, communication and customer-facing skills will remain high, especially to meet expectations of consumers who are increasingly more demanding and vocal in expressing their needs. Greater flexibility to adapt and customise products and services to individual customer needs may also be required.

6.3 Differences in Drivers across the four nations

In a market as large and as homogenous as the UK there are few differences in drivers across the nations. What differences there are result from the various policy and legislative differences between national Parliaments and Assemblies and the Westminster Government. While these differences will be covered in more detail in each nations SSA they are summarised here.

6.3.1 Wales

Table 6.2: Key Legislative Competence Orders relating to the CBSE&P sector in Wales:

Strategies	Details
Building Regulations powers set to transferred to Wales on 31 December 2011	The Assembly Government has set a 55 per cent improvement (over the 2006 Building Regulations) as the target for the first changes to devolved Building Regulations. It aims to bring forward detailed proposals for consultation during 2012 with a view to implementation in 2013.
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.

Strategies	Details
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 work of the UK Government, the UK Zero Carbon Hub, in particular in relation to fabric efficiency standards and primary energy use, and discussions through the Wales Low Zero Carbon Hub has informed thinking which builds on national planning policy set out in Planning Policy Wales. This currently sets an expectation of a 31 per cent improvement against the 2006 baseline for housing developments of 5 or more dwellings (with all dwellings from 1st September 2010). The 55 per cent represents a further improvement of 24 per cent against that policy.

For non-residential developments national planning policy, set out in Planning Policy Wales, currently sets an expectation for the BREEAM 'Very Good' standard with an ‘Excellent’ score for energy/CO2 to be achieved on all applications with a floorspace of 1,000m^2 or more. For Assembly Government funded projects the expectation is for the ‘BREEAM Excellent’ standard to be met in full.

The added difficult for Welsh housing in achieving these targets is the higher than average number of stone built , rural, and pre-1919 housing in the country. While these initiatives will not require any different skills from those set out in the rest of this report they may place greater demands on the workforce to achieve them.

6.3.2 Northern Ireland

Table 6.3: Key Legislative Competence Orders relating to the CBSE&P sector in Northern Ireland

Strategies	Details
Everyone's Involved – Sustainable Development Strategy	The Executive's strategy to provide Northern Ireland with a framework for the sustainability agenda.
Sustainable Development Strategy Implementation Plan	Details the actions to be taken by Government and others in support of achieving the strategic objectives within the Sustainable Development Strategy.
Success through Skills 2	This is the Skills Strategy for NI and provides an overarching framework for the development of skills by looking at the current skills base, examining the skills needed in the future to grow the economy and highlighting the areas for action. Its vision is one of achieving a skilled workforce by 2015.

These underpin the Investment Strategy for Northern Ireland with excellence in construction programmes that integrate Sustainable Development principles. It aims to ensure that public sector housing and public properties are constructed or refurbished to maximise sustainability and flexibility of use.

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

Key targets are to increase the skills and qualifications of the Northern Ireland workforce, (including the Essential Skills of numeracy, literacy and ICT), and to encourage higher value-added jobs and enhancements to productivity. There is an aim to address the under-representation of graduates in key sectors in the economy, including construction, which has resulted in under representation of managerial and professional occupations. If successful these should see a proportionally greater demand of high level management and professional skills that in the UK as a whole.

6.3.3 Scotland

The Scottish Parliament has arguably the most devolved power of all the nations. One of the areas where this has been used is in the large number of strategies and policies aimed at progressing to a low carbon, more energy efficient built environment including: Energy Efficiency Action Plan, Renewables Action Plan, Renewable Heat Action Plan; The Scottish Sustainable Procurement Action Plan, Scotland's Zero Waste Plan.

Table 6.4: Recent Legislative Competence Orders relating to the CBSE&P sector in Scotland:

Strategies	Details
Scottish Government Economic Strategy 2011	Covers priority areas such as low carbon, renewable energy and infrastructure. Although CBSE&P tends not to be mentioned explicitly, it is recognised as an enabling sector that underpins a lot of the others.
Low Carbon Economic Strategy for Scotland	Section 2.3 focuses on the economic opportunities across the built environment as a consequence of the moving to a low carbon economy. It also outlines the corresponding Strategic Objectives with associated actions.

All these policies are designed to deliver the more stretching greenhouse gas emissions targets set out in the Climate Change (Scotland) Act. This is enabling legislation which sets out the broad aims and targets for the reduction of carbon emissions in Scotland and gives power to local authorities and to the Scottish Ministers to require improvements to the energy performance of domestic and non-domestic buildings. The Act introduces targets to reduce carbon emissions in Scotland by at least 80 per cent by 2050 with an interim target reduction of 42 per cent by 2020. There are specific provisions in the Act which relate property in Scotland and which are likely to affect businesses.

Section 63 of the Act introduces a new requirement for assessment of the energy performance of and emissions from non-domestic buildings. The details of this requirement include provisions for the assessment of the energy performance of non-domestic buildings obliging owners to implement the recommendations in the assessment that will improve the energy efficiency of the buildings and reduce greenhouse gas emissions. This could include improving insulation, taking measures to reduce draughts, improving the efficiency of

equipment within buildings, and once new technologies become more cost effective, introducing low and zero carbon equipment.

The scale of the task is significant, going well beyond that of the UK as a whole, and will require a skilled workforce of significantly greater size than at present if it is to be achieved.

7 Future Skills Needs

Chapter Summary

- There are number of key drivers which could impact on the future skill needs these include the economy, environment, legislation and new and emerging technologies. The current issues with the economy are likely to cause a fall in construction output in the short term although in the longer term the industry will return to growth.
- Employment in the industry is likely to fall in the short term but will return to growth in the longer term. However this is a cause for concern as much of the focus for the industry is on short term survival rather than longer term recovery and growth.
- The Construction, Building Services Engineering and Planning Sector differs from the workforce of the whole economy in that skilled craft occupations form a much larger proportion of the workforce. However in the future within Construction, Building Services Engineering and Planning there is going to be small shift away from skilled craft occupation to managers and professionals having a larger share of the industry.
- Many of the future skill needs of the sector are likely to be a development of existing roles rather than a requirement for new skills. Knowledge and understanding of new and emerging products and processes will be essential to the delivering of a low carbon sector.

7.1 Drivers of future trends in skills needs

The drivers of change which will impact upon the CBSE&P sector are outlined in detail in section 6 of this report. This section will focus on a number of these drivers which could have a bearing on the future skills needs of the sector.

7.1.1 Economy

The impact of the contraction of the UK economy will cause output in the CBSE&P sector to fall particularly in the short term. Construction output is likely to fall with a predicted drop of three per cent [39] in 2012 in the UK as a whole. It will gradually pick up for the remainder of the Construction Skills Network forecast period of 2012 - 2016 to give an annual average growth rate of one point four per cent.

[39] Construction Skills Network (2012) Blueprint for UK Construction 2012-2016. ConstructionSkills

It is likely that private housing, commercial and industrial will be the key drivers for future output. Public sector housing and non-housing will continue to contract over the forecast period due to the public sector cuts.

In Scotland in the short term the forecast contraction for construction output is larger than the UK as a whole with a fall of five per cent in 2012. However it will rise sharply in 2013, and then improve steadily for the remainder of the forecast period. This will give a predicted annual average increase of 1.3 per cent, just below the UK figure. The key sectors driving output will be infrastructure followed by private housing and commercial.

Wales too is forecast for a short term fall in output in 2012 of four per cent and then output will rise from 2013 onwards to give a predicted annual average increase of 1.3 per cent over the five year forecast period. Key drivers of output in Wales are industrial followed by private housing and commercial.

Northern Ireland is forecast to see a one per cent rise in construction output in 2012 and its annual average increase predicted to be 1.4 per cent, in line with the UK as a whole. Key drivers of output for Northern Ireland are commercial, followed by private new housing and housing repair and maintenance.

7.1.2 Environment and Legislation

The transition to a low carbon economy remains a key priority for the UK Government in order to meet the legally binding targets of a reduction of carbon emissions of 80 per cent by 2050 and 34 per cent by 2020[40] and to ensure a more stable supply of energy. A number of policies and legislative processes are in place or are being developed to help deliver this transition.

The Energy Act 2011[41], one such piece of legislation, gained Royal Assent in 2011 and will pave the way for the launch of the Green Deal in October 2012. Green Deal is the UK Government's flag ship initiative to improve the energy efficiency of existing buildings. It provides a finance mechanism which will enable improvements to the energy efficiency of households and non-domestic buildings with no up-front costs

[40] Climate Change Act 2008 – Department of Energy and Climate Change
[41] Energy Act 2011 – Department of Energy and Climate Change

In addition to Green Deal the Energy Act also covers the Energy Company Obligation (ECO) which will replace Carbon Emissions Reduction Target (CERT) and Community Energy Saving Programme (CESP). ECO will work alongside Green Deal and will provide additional support for energy efficiency measures for low income families or for hard to treat properties.

The Energy Act 2011 and the subsequent Green Deal are both UK wide initiatives. In addition to this both Scotland and Wales have their own polices for energy efficiency. Scotland has the Climate Change Act (Scotland) 2009 which sets its own targets for Carbon Reduction of 80 per cent by 2050 and 42 per cent by 2020. Scotland also has its Energy Efficiency Action Plan which details a number of actions including improving the energy efficiency of all housing stock and developing a public sector that leads way through exemplary energy performance.

The Welsh Government too has its own Climate Change Strategy and is committed to reducing emissions by three per cent per year in the areas it controls. It has developed an Energy Efficiency Savings Plan to help deliver its Climate Change Strategy by including actions to reduce emissions and to improve the energy efficiency of buildings.

Northern Ireland is currently scoping for a new energy bill which is likely to be consulted on in the spring. It is likely to contain provisions relating to a feed-in tariff (FIT) and issues related to energy efficiency.

In addition to reducing emissions through the improvement of existing buildings there is also the focus to improve the energy efficiency of new homes. In England this will be through the Code for Sustainable Homes and stepped improvements in Part L of the Building Regulations in 2011, 2013 and 2016, with the aim of homes being deemed zero carbon by 2016 as per the Governments definition of zero carbon[42].

From December 2011 powers to set Building Regulations will be passed to the Welsh Government. It has set a target to deliver a 55 per cent reduction in carbon emissions from new build by 2013 (based on a 1990 baseline). New housing that the Welsh Government influences, through grant funding investment or land disposals, will be required to meet at least Level 3 of the Code for Sustainable Homes moving as quickly as possible to Level 4.

Scotland too has the goal of net zero carbon for heating, lighting and ventilation by 2016/2017 and will also use staged revisions to the energy standards within the Scottish Building Standards to deliver this.

[42] The Rt Hon Grant Shapps MP- Buildings and the Environment Statement 17 May 2011

Reducing carbon emissions is all about mitigating the impact of climate change however despite the action being taken now and in the future, scientists are predicting that there will still be changes to the climate such as warmer and wetter winters, hotter and drier summers and unusual weather conditions such as prolonged rain or stronger winds. There will be a requirement to adapt to any climate change, this is particularly crucial for the CBSE&P sector given the life expectancy of buildings. This will require the adaptation of the existing Built Environment to deal with a climate that may be significantly different from that in which it evolved.

Within the UK Government the Department for Food and Rural Affairs (DEFRA) are undertaking their first Climate Change Risk Assessment; this will include a skills audit for climate change adaptation. The Department for Communities and Local Government (DCLG) are also looking at over-heating issues for inclusion in future building regulations and codes for new buildings.

The Welsh Government has an Adaptation Framework and Adaptation Delivery Plan as part of its Climate Change Strategy. Key to the framework will be in understanding the impacts of climate change and what needs to be done to meet these changes. Scotland too has a Climate Change Adaptation Framework which will play a role in building Scotland's resilience to the changing climate.

7.1.3 Technology

The UK Government through the Department for Business Innovation and Skills plans to introduce a progressive programme of mandated use of fully collaborative Building Information Modelling (BIM) for Government projects by 2016 [43] with a phased roll out from 2012.

BIM is a managed approach to the collection and management of all information across project. At the centre of BIM is a computer-generated model containing all the graphical and tabular information about the design, construction, installation and operation of a building.

7.2 Impact on Employment and Skills

Taking the drivers and trends outlined above the potential impact on UK employment for the sector is illustrated by Working Futures 2010-2020 (Wilson and Homenidou, 2011) details shown in Table 7.1.

[43] Government Construction Strategy May 2011 – Cabinet Office

From 2010 to 2020 there is a forecast net increase in employment of over 300,000 for the sector with employment reaching over 2.9 million by 2020. Of the occupational groups, the largest increases will be in Professional occupations, Skilled trades occupations and Manager, directors and senior officials. The combined totals from these three broad occupational groups will account for nearly 80 per cent of total occupational growth over the period.

Table 7.1 Workplace job growth by occupation within CBSE&P – United Kingdom

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	240	274	312	9.2	10.0	10.7	72
Professional occupations	395	440	485	15.2	16.1	16.7	91
Associate professional and technical	228	256	283	8.8	9.3	9.7	55
Administrative and secretarial	217	212	211	8.3	7.8	7.3	-6
Skilled trades occupations	1,180	1,209	1,264	45.4	44.2	43.5	84
Caring, leisure and other service	6	7	8	0.2	0.3	0.3	2
Sales and customer service	43	47	51	1.7	1.7	1.7	7
Process, plant and machine operatives	180	181	180	6.9	6.6	6.2	0
Elementary occupations	110	111	114	4.2	4.1	3.9	4
All occupations	2,599	2,737	2,908	100.0	100.0	100.0	309

Source Working Futures 2010-2020, Wilson and Homenidou (2011)

The long term forecast from Working Futures 2011 is supported by recent findings from The Construction Skills Network[44]; however there is a contrast when looking at the short term view against the long term. As discussed earlier when considering economic trends, in the short term the CBSE&P sector is facing challenging times with further recessionary effects and a lack of investment, which is likely to lead to falling employment levels in 2012 and 2013, before growing from 2014.

Although the long term outlook is for growth in the sector, the short term view is a concern as it influences employer decisions about recruitment and employment, with focus being on short term survival, rather than longer term recovery or growth[45].

Table 7.1 shows job growth by broad occupational classifications, however there are a range of occupations within these classifications that highlight the main areas where job growth will impact. Table 7.2 shows the largest occupational groups within the sector and from this it is possible to identify key skilled trades, managerial and professional occupations.

[44] Construction Skills Network (2012) Blueprint for UK Construction 2012-2016, ConstructionSkills
[45] ConstructionSkills (2010) Understanding Future Change in Construction

Table 7.2 Largest occupation groups within the sector (UK) 2010

Rank	Occupation	000s	% workforce
1	5315 Carpenters and joiners	199	7
2	5319 Construction trades n.e.c.	194	7
3	1122 Managers in construction	186	7
4	5314 Plumbing, heating & ventilating engineers	156	6
5	5241 Electricians, electrical fitters	153	6
6	9121 Labourers build & woodworking trades	122	5
7	5323 Painters and decorators	95	4
8	5312 Bricklayers, masons	77	3
9	1121 Prod. works & maintenance managers	65	2
10	5321 Plasterers	54	2
11	2121 Civil engineers	54	2
12	4150 General office assistants or clerks	54	2
13	8149 Construction operatives n.e.c.	49	2
14	2431 Architects	45	2
15	2434 Chartrd surveyors (not qntity surv)	45	2
	Other occupations	1150	43
	Total workforce	2,696	100
	Unweighted base (000s)	*17.925*	

Source Labour Force Survey 2010, ONS

Table 7.2 shows largest occupation groups within the CBSE&P sector as per the Labour Force Survey in 2010. The largest group are the skill trades occupations with a total of 851,000 with managers 251,000 and professions 157,000.

In the short term the contraction of the economy is likely to have a negative effect on the levels of employment within the CBSE&P sector. The ConstructionSkills Network predicts a fall in total employment in the short term before starting to grow again in 2014. The Working Futures 2010-2020 data also supports this, as shown by table 7.1

Through the Working Futures 2010-2020 data (Wilson and Homenidou, 2011) it is not possible to identify how each of these main occupations will be affected as they are grouped together rather than showing each of the occupations separately for example carpenter, bricklayers etc. are brought together as skilled trade occupations. However some insight can be given from the Construction Skills Network forecast which indicates that the employment numbers for managers in construction will increase. However with the skilled craft trades, although employment is predicted to increase overall, some of the trades such as bricklaying and painting are forecast to fall in numbers.

Looking in more detail at the nations within the UK, there are some differences in job growth.

Table 7.3 details employment growth for England, which follows the trends in the data for the UK with growth in employment predicted. Also with the UK the largest areas of growth are professional occupations, managers, directors and senior officials.

Table 7.3 Workplace job growth by occupation within the CBSE&P sector - England

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	202	228	259	9.3	10.1	10.8	56
Professional occupations	335	369	403	15.5	16.4	16.9	68
Associate professional and technical	189	209	230	8.8	9.3	9.6	41
Administrative and secretarial	177	171	169	8.2	7.6	7.1	-8
Skilled trades occupations	987	1,001	1,045	45.6	44.4	43.8	58
Caring, leisure and other service	5	6	6	0.2	0.2	0.3	1
Sales and customer service	36	38	41	1.7	1.7	1.7	5
Process, plant and machine operatives	144	143	142	6.7	6.3	6.0	-2
Elementary occupations	89	89	91	4.1	3.9	3.8	2
All occupations	2,164	2,255	2,386	100.0	100.0	100.0	222

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

Scotland too follows the UK trend with construction employment predicted to increase by 50,000 by 2020 as detailed in table 7.4. Again the key areas of increased employment are managers, directors and senior officials, professional occupations associate professional and technical and skilled trades occupations.

Table 7.4 Workplace job growth by occupation within the CBSE&P sector - Scotland

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	25	31	35	10.0	11.1	11.9	11
Professional occupations	39	46	54	15.7	16.8	18.2	16
Associate professional and technical	27	32	37	10.8	11.7	12.4	10
Administrative and secretarial	25	26	26	10.1	9.4	8.7	1
Skilled trades occupations	95	99	104	38.3	36.2	34.9	9
Caring, leisure and other service	*	*	*	*	*	*	*
Sales and customer service	5	5	6	1.8	1.9	1.9	1
Process, plant and machine operatives	20	22	21	8.1	7.8	7.2	1
Elementary occupations	12	13	13	4.8	4.7	4.5	2
All occupations	248	274	298	100.0	100.0	100.0	50

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

Wales' construction employment is predicted to rise by 26,000 by 2020 however, whereas in the UK the main growth areas are managers, directors and senior officials, in Wales the largest area of growth is predicted to be the skilled trades occupations. This is detailed in Table 7.5

Table 7.5 Workplace job growth by occupation within the CBSE&P sector - Wales

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	9	10	12	7.3	7.8	8.3	3
Professional occupations	15	17	19	12.1	12.5	13.3	5
Associate professional and technical	9	10	11	7.2	7.5	7.9	3
Administrative and secretarial	10	11	11	8.4	8.0	7.5	1
Skilled trades occupations	59	67	72	49.8	50.0	49.7	13
Caring, leisure and other service	*	*	*	*	*	*	*
Sales and customer service	2	2	3	1.8	1.8	1.7	0
Process, plant and machine operatives	11	11	11	9.0	8.3	7.5	0
Elementary occupations	5	5	5	4.3	3.9	3.7	0
All occupations	120	134	145	100.0	100.0	100.0	26

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

In Northern Ireland employment is predicted to rise by 11,000 by 2020, it follows the pattern for Wales where the largest area of growth is in the Skilled trade occupations. This is detailed in Table 7.6.

Table 7.6 Workplace job growth by occupation within the CBSE&P sector – Northern Ireland

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	4	5	6	6.0	6.8	7.4	2
Professional occupations	7	8	9	9.8	10.6	11.1	2
Associate professional and technical	4	4	5	5.2	5.5	5.9	1
Administrative and secretarial	5	5	6	7.3	7.2	6.9	1
Skilled trades occupations	38	41	43	56.5	55.0	54.3	5
Caring, leisure and other service	*	*	*	*	*	*	*
Sales and customer service	*	1	1	*	1.4	1.5	*
Process, plant and machine operatives	5	5	6	8.1	7.4	6.9	0
Elementary occupations	4	4	4	5.7	5.8	5.6	1
All occupations	68	74	79	100.0	100.0	100.0	11

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

7.3 Future Occupational Profile

In addition to employment growth it is also important to understand how the occupational profile for the sector will change in future years and how CBSE&P compares to the wider UK view. Table 7.7 shows the workforce profile for the UK economy has a whole and when comparing this against Table 7.1, shown earlier there are a number of notable points.

Table 7.7 Workplace job growth by occupation within the Whole Economy, by geography – United Kingdom

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	3,016	3,279	3,560	10	11	11	544
Professional occupations	5,843	6,189	6,712	19	20	21	869
Associate professional and technical	3,926	4,138	4,476	13	13	14	551
Administrative and secretarial	3,698	3,466	3,312	12	11	10	-387
Skilled trades occupations	3,526	3,389	3,295	12	11	10	-230
Caring, leisure and other service	2,719	2,801	3,032	9	9	9	313
Sales and customer service	2,608	2,555	2,610	9	8	8	2
Process, plant and machine operatives	1,950	1,829	1,737	6	6	5	-213
Elementary occupations	3,173	3,209	3,274	10	10	10	101
All occupations	30,458	30,855	32,008	100	100	100	1,550

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

In 2010 managers, directors and senior officials made up ten per cent of the whole workforce; this is predicted to rise to 11 per cent in 2015 and 2020. Skilled trade occupations made up 12 per cent of the workforce in 2010; this is predicted to fall to 11 per cent in 2015 and 10 per cent in 2020. If you compare this with table 7.1 which details the workforce for the CBSE&P sector, here managers, directors and senior officials make up 9.2 per cent of the workforce in 2010 and is predicted to make up ten per cent in 2015 and 10.7 per cent in 2020. This is slightly less than the UK economy as a whole. However if you look at the percentage share for Skilled trade occupations in the CBSE&P sector this was 45.4 per cent in 2015 and is predicted to be 44.2 per cent in 2015 and 43.5 per cent in 2020. This shows that within the CBSE&P sector the skilled occupations make up a much larger proportion of the workforce compared to the UK economy as a whole.

The CBSE&P sector workforce does follow a similar pattern to the UK workforce as a whole where it appears that Managers, directors and senior officials and Professional occupations share of the workforce is increasing while the Skilled trades occupations share is decreasing. Despite this, Skilled trades will remain the main occupational group for the sector, accounting for over 43 per cent of employment in 2020, significantly more than the overall UK economy share of ten per cent.

The general increase in the shares of professional, managerial and associate professional and technical occupations all showing growth and increased shares of the workforce both for the UK and for the sector, look to be part of a longer term trend for the economy. It will also be in part, CBSE&P employers looking to develop and improve skill levels to reflect the drivers outlined earlier which look set to increase demand for professional, managerial and technical skills across the sector.

As with overall employment, there are differences when looking at the occupational profile across the four nations.

Table 7.8 details employment growth in England for the whole economy and as with the UK skilled trades percentage share of the whole workforce is much lower than when compared to the CBSE&P sector as shown in tables 7.1 and 7.3. England also follows the trend in the UK where the percentage share of the total workforce is increasing for managers and is decreasing for skilled craft occupations.

Table 7.8 Workplace job growth by occupation within the Whole Economy - England

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	2616	2853	3098	10.1	10.9	11.4	482
Professional occupations	4989	5289	5741	19.4	20.2	21.1	752
Associate professional and technical	3405	3596	3889	13.2	13.7	14.3	484
Administrative and secretarial	3126	2925	2797	12.1	11.2	10.3	-329
Skilled trades occupations	2905	2784	2699	11.3	10.6	9.9	-206
Caring, leisure and other service	2310	2393	2593	9.0	9.2	9.5	283
Sales and customer service	2191	2148	2184	8.5	8.2	8.0	-7
Process, plant and machine operatives	1619	1519	1449	6.3	5.8	5.3	-170
Elementary occupations	2614	2646	2709	10.1	10.1	10.0	95
All occupations	25775	26153	27158	100.0	100.0	100.0	1383

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

Table 7.9 details the workplace job growth within the whole economy for Scotland. When comparing this table with tables 7.1 and 7.4, Scotland follows the UK trend for skilled craft occupations in the whole economy to have a much lower percentage of the total workforce then the CBSE&P sector. Also as with the trend in the UK the percentage of managers in the CBSE&P workforce in Scotland is increasing whilst the skilled craft occupations is falling.

Table 7.9 Workplace job growth by occupation within the Whole Economy –Scotland

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	222	234	252	8.8	9.3	9.8	31
Professional occupations	477	499	536	18.9	19.8	20.8	58
Associate professional and technical	289	301	325	11.4	11.9	12.6	35
Administrative and secretarial	316	296	279	12.5	11.7	10.8	-37
Skilled trades occupations	317	302	293	12.5	12.0	11.4	-24
Caring, leisure and other service	191	189	203	7.5	7.5	7.9	13
Sales and customer service	215	207	212	8.5	8.2	8.2	-3
Process, plant and machine operatives	176	162	150	7.0	6.4	5.8	-26
Elementary occupations	325	333	328	12.9	13.2	12.7	3
All occupations	2528	2523	2579	100.0	100.0	100.0	51

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

Table 7.10 details the workplace job growth within the whole economy for Wales. When comparing this table with tables 7.1 and 7.5, Wales follows the UK trend for skilled craft occupations in the whole economy to have a much lower percentage of the total workforce then the CBSE&P sector. Also as with the trend in the UK the percentage of managers in the CBSE&P workforce in Wales is increasing whilst the skilled craft occupations is falling.

Table 7.10 Workplace job growth by occupation within the Whole Economy – Wales

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	108	116	126	8.1	8.6	9.0	18
Professional occupations	230	245	265	17.3	18.2	18.9	35
Associate professional and technical	139	144	157	10.5	10.7	11.2	18
Administrative and secretarial	154	145	138	11.6	10.8	9.9	-15
Skilled trades occupations	185	190	192	13.9	14.1	13.7	7
Caring, leisure and other service	128	129	140	9.6	9.6	10.0	11
Sales and customer service	124	124	136	9.4	9.3	9.7	11
Process, plant and machine operatives	105	100	92	7.9	7.4	6.6	-13
Elementary occupations	156	151	155	11.7	11.2	11.1	-1
All occupations	1330	1344	1401	100.0	100.0	100.0	71

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

Table 7.11 details the workplace job growth within the whole economy for Northern Ireland. When comparing this table with tables 7.1 and 7.6, Northern Ireland follows the UK trend for skilled craft occupations in the whole economy to have a much lower percentage of the total workforce then the CBSE&P sector. Also as with the trend in the UK for the percentage of managers in the CBSE&P workforce in Northern Ireland is increasing whilst the skilled craft occupations is falling.

Table 7.11 Workplace job growth by occupation within the Whole Economy – Northern Ireland

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020
	Numbers (000s)			% shares			Net change (000s)
Managers, directors and senior officials	70	76	84	8.5	9.1	9.6	13
Professional occupations	147	156	171	17.8	18.7	19.6	24
Associate professional and technical	92	97	106	11.2	11.6	12.1	13
Administrative and secretarial	103	100	97	12.4	12.0	11.2	-6
Skilled trades occupations	119	113	111	14.4	13.5	12.8	-8
Caring, leisure and other service	90	90	96	10.9	10.7	11.0	6
Sales and customer service	77	76	78	9.4	9.1	9.0	1
Process, plant and machine operatives	50	47	46	6.0	5.7	5.3	-4
Elementary occupations	77	80	82	9.4	9.6	9.4	5
All occupations	826	836	870	100.0	100.0	100.0	44

Source: Working Futures 2010-2020, Wilson and Homenidou (2011)

7.4 Future Skills Needs

Having looked at the key drivers which could impact on the future skills of the industry, along with how employment and the occupation profiles may change, an understanding of what the future skills may be is required. Will there be specific new skills required or will current skills need adapting to meet the requirements of the economy, the environment, changing policies and legislation and new and emerging technologies? One of the key future skills needs will be skills relating to low carbon, energy efficiency measures, in particular the Green Deal which is due to be implemented from October 2012. Table 7.12 outlines the main Green Deal Measures and in which sector they belong.

Table 7.12 Green Deal Measures

Heating, ventilation and air conditioning	Condensing boilers Heating controls Under-floor heating Mechanical ventilation (non-domestic) Flue gas recovery devices
Building Fabric	Cavity wall insulation Loft insulation Flat roof insulation Internal wall insulation External wall insulation Draught proofing Floor insulation Heating system insulation (cylinder, pipes) Energy efficient glazing and doors
Lighting	Lighting Fittings Lighting Controls
Water Heating	Innovative hot water systems Water efficient taps and showers
Microgeneration	Ground and air source heat pumps Solar thermal Solar PV Biomass boilers Micro-CHP

Source: What measures does the Green Deal Cover? – DECC July 2011

The following are the core job roles to deliver green deal;

- Energy Assessor
- Energy Advisor
- Insulation Installer
- Renewable Technology or Building Services Engineering Installer

However in the main these job roles are likely to be the development of existing roles rather than the creation of new jobs. This was a key finding from the recent Pye Tait[46] report which states:

> A strong message from respondents is the likelihood that there will be enhancement of existing roles and multi skilling among the existing workforce (particularly among SMEs) rather than substantial creation of new jobs.

[46] Research to support the development of a Green Deal Competence Framework – Pye Tait January 2012

Relating the core roles for the delivery of Green Deal to the current occupational groups as shown in Table 7.2 they are likely to fall within (5319) construction trades n.e.c, (5314) plumbers, heating and ventilation engineers and (5241) electricians and electrical fitters as related to the SOC 2010.

In addition to the Pye Tait research other research carried out by BRE[47] identifies the need for the development of what could be described as the softer skills. It stated that a key finding of the study was that:

> Management and customer service skills are critical to retrofit projects particularly on social housing projects where residents are still occupying properties. Management and trades require strong customer service skills to ensure a continuous flow of work and reduce delays due to access to properties.

It will be critical to the success of Green Deal that there is a fully skilled and competent workforce to deliver the measures. In order to provide customer confidence and quality control the will be an accreditation scheme for both products and installers. There will be a requirement for the existing workforce to invest in training and up-skilling to meet the requirements of the accreditation scheme when it is launched later this year.

When looking at the skill requirements for delivering low and zero carbon new build homes, previous research has identified that again it is more likely to require the development of existing skills and knowledge rather than the creation of new job roles. Two areas critical to achieving low and zero carbon new build are air tightness and thermal bridging. These issues will need to be understood across the whole of the workforce involved in new build construction. A recent report by BRE[48] states that

> Knowledge of processes, rather than more skills, are often required to understand the requirements of a low carbon construction and an awareness of what other trades are doing to avoid conflicting actions that can damage work by other trades and/or cause delays therefore increasing costs.

Again as with energy efficiency improvements to existing buildings, the softer management skills are essential to the construction and installation of low and zero carbon new build. As stated in the BRE report

[47] Delivering Low Carbon Skills in Wales - Retrofit Learning Project- BRE October 2011 - The research consisted of three phases, on site monitoring of a refurbishment project, a workshop with key stakeholders and qualitative interviews with Sector Skills Councils and the Welsh Government. See Appendix A for more information.

[48] Delivering Low Carbon Skills in Wales – Low Carbon New Build Learning Project – BRE December 2012. This applied research project was commissioned by the Delivering Low Carbon Skills in Wales to investigate the impact of innovation on skills, focusing on low carbon new build skills. A specific aim was to identify skills gaps and skills/knowledge gaps evident in the construction of low carbon new build housing. See appendix A for more information

> Professional skills development is of equal importance as trade and installer skills development, with the need for more professionals to acquire key technical skills including the use of technical methodologies such as Standard Assessment Performance (SAP) and thermal bridging.

Adapting to climate change will require a review of techniques, materials and fixings to ensure that new buildings are weatherproof and robust. Designers will need to able to consider innovative solutions to ensure buildings are suitable and comfortable for people to live and work in.

New ways of working on site may need to be adopted which could involve having to manage the laying of concrete in hotter summers or managing drainage on site in extreme wet weather. With warmer winters less heating may be required in buildings but if summer heat is much more extreme passive design features will be important as may be some form of active cooling. This will still all have to be achieved within the requirement of reducing carbon emissions.

7.5 How to distinguish between Current and Future Skills Needs

While there are some clear drivers and trends outlined, there is also the question about the extent that current and future skills requirements can be distinguished. As research shows[49], in 2010 two of the short term drivers were a focus on surviving the recession while trying to understand potential commercial opportunities across the sector and their associated costs.

Going into 2012, both of these drivers remain paramount given the limited prospects for growth in the sector, public sector cuts, sluggish private sector investment and wider concern over the Eurozone[50].

When this is linked to uncertainty about what measures such as Green Deal will deliver in the future, with aspects of the legislation being worked on at the moment, it makes it very challenging for employers to be able to clearly separate current and future skills needs.

Current needs are still focused on surviving the recession, and this short term view is a definite barrier when it comes to planning future skills needs as it requires employers to make investment decisions on skills at a time when margins are being squeezed and costs increasing.

[49] ConstructionSkills (2010) Understanding the Future Change in Construction
[50] ConstructionSkills (2012) Blueprint for UK Construction 2012-2016

Ultimately the changes occurring across the CBSE&P sector should result in a leaner, more efficient, more productive, multi-skilled workforce with increased cross-sector collaboration. However before employers are able to realise this there will need to be some stabilisation and growth within the sector to generate confidence about long term prospects for investment in future skills needs.

8 Priority areas for action

8.1 Introduction

The Sector Skills Assessment for construction, building services engineering and planning (CBSE&P) has identified current and likely future trends in the demand for skills and employment in UK over the coming five to 10 years, using a range of available national data sources, and supplemented by sectoral research and insight provided by the contributing Sector Skills Councils.

This final chapter draws together the material analysed so far to set out key strategic areas for action in the short, medium and long-term. We focus, more specifically, on the occupations and issues where most attention is required if we are to ensure that the CBSE&P sector has the necessary skills to play a positive role in delivering economic growth that underpins UK prosperity over the longer-term. However, the aim of improving sector performance is not solely to improve economic prosperity, but also to achieve greater social inclusion and wellbeing. In this respect, we also attempt to reflect on the social contribution of the sector, specifically its contribution to securing a more sustainable future.

8.2 Priority areas for action

In this final part of the assessment, we seek to identify the skills which are strategic priorities for action, both currently and in the future. In particular, we focus attention on the most pressing areas that have been identified in the analysis.

In prioritising the areas for action, we draw on the risk-based approach adopted in Australia (Skills Australia, 2008). This approach enables us to identify the key occupations, and in turn related issues, where there are most likely to be important strategic skills needs, which risk not being effectively met without specific and target intervention. The risk based approach uses the following criteria:

Degree of certainty – this essentially considers the likelihood of the drivers of the skills demand materialising, and, the risk of supply failure, with assessments ranging from ‘unknown certainty’ to the outcome being definite. It also includes consideration of the significance of the skill deficit.

Magnitude – this considers the scale of action required based on the magnitude of skills needs. Essentially, this is broadly based on the numbers of jobs that need filling, but also considers the potential number of training interventions required within the current workforce. Future assessments of magnitude capture total employment and training demand, and incorporate both replacement demand as well as new jobs. The rating varies from small to large, with the highest scale covering demand for at least 100,000 workers, the medium scale for 50,000 to 100,000 workers and the small scale applying where demand is for less than 50,000 workers.

Lead time – this seeks to assess the length of time taken to rectify the skills deficit. In doing so, it also considers whether there is an absence of alternative preferred strategies to overcome the deficit. It deploys categories ranging from short to long term, with: the long lead time being more than five years, three-five years capturing the medium lead time, and less than three years applying to the short lead time. This measure includes both the learning time required for individuals and the set up time for any new training or educational provision.

Criticality – this seeks to assess the potential risk to economic growth and development according to:

1 where the opportunity costs of skills deficits could be high to the economy;

2 where the consequences of skills deficits could be high within the sector, even if the numbers of jobs involved are small.

Thus, some of the likely deficits are about capacity – i.e. insufficient numbers of people with the necessary skills and knowledge, and others are about capability – the numbers of people exist, but their skill sets needs to change in order to meet changing needs.

Depending on how these factors combine, each skills deficit is then given an importance rating or ‘traffic light’ colour, indicating how much of a priority it is for action. The only weighting given to these factors is whether the opportunity costs of skills deficits could be high to the economy overall and require immediate action. Where this is most severe it automatically results in a top priority rating, which is signified with the colour red. More specifically, the ratings used are:

Red, reflecting skills deficits which are of critical importance to the economy and require immediate action, either because there are current skills needs already not being met and/or because lead times are such that early action is required to fully optimise economic growth potential and avoid deficits in future.

Pink, reflecting skills deficits which are again of critical importance to the economy or a particular part of the economy or sector, in terms of expansion, survival and/or optimising returns, but which may be smaller in scale and have a shorter lead time than for those rated as red.

Amber, reflecting skills deficits which are important to the economy and/or a distinct sector rather than critical (although the degree of certainty may be less clear and hence the true impact unknown, where the skills needs are connected to a developing or emerging sector in the economy). Furthermore, skills deficits are either moderate in scale and/or can be filled in a medium to short time frame.

Green ratings are not separately identified as these represent areas where generally there is a better alignment between supply and demand and hence less pressing skills issues requiring additional action.

Table 8.1 presents a summary of the results of the priorities analysis. The table is organised under broad skill/occupational priority headings (these are illustrated in the white rows in the table).

A number of key trends and structural considerations provide the context for the analysis of skills priorities within the sector:

- The CBSE&P sector presents a particular challenge in that it is served by an itinerant workforce because of the project by project nature of the sector. This is especially the cases amongst skilled trades, but also applies (albeit to a lesser extent) to professional services that are the subject of internal transfers within firms, particularly between international offices. This means that some construction sites – especially large-scale projects – will draw in workers, usually on a sub contracted basis. These are likely to be from other parts of the country, or abroad. Indeed, with self-employment representing over a third (36 per cent) of the available industry labour geographic and occupational mobility is high.

- The flexibility of such a large pool of self-employed labour offers significant financial advantages to clients. The disadvantage however, is the lack of investment in skills and qualifications by those who are self-employed. 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. 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 sector.
- Skills and training issues are further complicated by the fact that large parts of the construction contracting section of the sector is biased towards lower level qualifications than the overall UK workforce and that employers' perception of competence is not necessarily consistent with qualification attainment, particularly in the construction contracting sub-sector. Of course many parts of the CBSE&P sector are characterised by relatively high levels of qualifications even amongst skilled trades. For, example plumbing and heating engineers and electricians generally hold Level 3 qualifications, although this is driven by a degree of occupational regulation and competent person schemes. However, for the wider construction contracting sector it is often the case that time served measures are considered more important and meaningful than qualifications. Whilst the picture is changing it remains a persistent issue within the sector and might ultimately represent the most significant barrier to achieving the higher skills (Level 3 and beyond) goal within the sector more broadly.

Key:

Red – high priority skills needs for immediate action

Pink – high priority skills needs which are of importance rather than critical to the economy and/or distinct sectors but where deficits are smaller in scale and require a shorter lead time to rectify than for those rated red

Amber – medium priority skills needs of moderate scale and/or time frame for action where the degree of certainty of their impact may be less critical

Table 8.1 Priority action matrix

Skill/occupational priority	**Degree of certainty – definite, likely, possible, unknown?**	**Magnitude – large, medium, small? (current and future)**	**Lead time – short/medium/long?**	**Criticality to a) the CBSE&P sector b) UK economy through GVA and/or job volume?**
Management roles				
Greater management skills will be required as firms need greater flexibility to operate profitably in a competitive environment, and make the best use of the skills of their current workforce. This is particularly the case for Site Managers	Definite Significant current as well as future demand; and current evidence of deficits e.g. gaps Future trends accentuate demand e.g. organisations expected to need to be increasingly 'lean' and 'agile' to cope with market change, increasing competition, and adopt HPW – change management and leadership key amongst core management population	Large Significant demand for these skills/jobs Increase of 30 per cent between 2010 and 2020	Medium	Critical especially in the sector as businesses need to operate more efficiently during recessionary conditions and there is a real risk that in the medium-term, as the industry begins to recover, there will be a shortage of skilled managers

Key:

Red – high priority skills needs for immediate action

Pink – high priority skills needs which are of importance rather than critical to the economy and/or distinct sectors but where deficits are smaller in scale and require a shorter lead time to rectify than for those rated red

Amber – medium priority skills needs of moderate scale and/or time frame for action where the degree of certainty of their impact may be less critical

Skill/occupational priority	**Degree of certainty – definite, likely, possible, unknown?**	**Magnitude – large, medium, small? (current and future)**	**Lead time – short/medium/long?**	**Criticality to a) the CBSE&P sector b) UK economy through GVA and/or job volume?**
Management skills and capability in exploitation of general purpose and specific technologies	Definite/likely Given rate of on-going technological change and its importance as a driver of business development etc. Whilst the type of technology and its application very difficult to predict the current trends would suggest that collaborative software and principles of social networking The structure of the industry (large number of micro and small enterprises) may mitigate	Large Effects potentially pervasive and large scale given importance of on-going technological developments across economy	Medium Increasing the number of manager qualified to level 4 or above is only part of the solution Developing management capability through mix of on-the-job and off-the-job development is essential in terms of gaining practical experience	Anticipated to be critical to maximising productivity across the sector and the UK economy – job creation potential unknown

Key:

Red – high priority skills needs for immediate action

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	against widespread adoption of new skills Will be driven by large businesses through their supply-chains			
Management skills and capability in commercial awareness and entrepreneurialism	Definite Based on analysis of current skills shortages and future needs stemming from globalisation affecting major contractors and growing competition in the indigenous UK market, particularly micro and small enterprises who are increasingly having to compete with medium and large-sized	Large Significant latent demand for these skills, particularly amongst micro and small enterprises whose growth is restricted by management skills as well as the availability of credit/investment	Medium to long The structure of the industry and working patterns mitigate against managers, particularly in small owner/operator business from up-skilling	Critical to both Anticipated to be critical to maximising productivity across the sector and absolutely essential in terms of job creation and the delivery of apprenticeships

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	firms that have been forced to retrench and refocus operations as a result of the recession			
Specific management skills Managers will need to acquire new knowledge of end-to-end processes. This will require increased need for BIM trained managers, but more fundamentally a greater appreciation of the whole building process and the interrelatedness of processes (i.e. design and planning through to construction and subsequently building	Likely Based on analysis of trends to date The structure of the industry (large number of micro and small enterprises) means this applies in the first instance to large businesses, but will be driven down to wider industry through their supply-chains	Small to medium Initially restricted to large businesses and their extended supply-chains, but in aggregate more significant demand, particularly amongst micro and small enterprises who lack exposure to much construction outside of the domestic repair and maintenance sector	Medium to long	Critical to ensuring a more efficient and productive sector, particularly in the delivery of very large projects that are delivered over a long timeframe and requiring phased activity (i.e. transport and energy infrastructure projects)

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management/maintenance) This also applies to inter-sector relationships, notably with clients, manufacturers and suppliers, and end-users				
Professional roles				
Professional occupations (such as Architects, Surveyors, Engineers, etc.) will need to acquire new knowledge of building life-cycle assessment and life-cycle cost analysis. This will require increased need for BIM trained professionals	Definite Based on the need for a more integrated approach to building design and construction, and maintenance. Current uptake of BIM will follow a similar growth arch of CAD/CAM only over a much shorter timeframe Support from professional institutions and Government	Medium to large Professional occupations are forecast to grow by more than 20 per cent Driven by the need for greater collaborative working between design professionals and skilled trades within CBSE&P, but also further integration of on-site construction with off-site	Medium to long Requires level 4 or above qualifications	Critical to both a) Developing a new core skill-set for the sector and b) Collaborative and lean working are essential to the delivery of the high priority low carbon growth sector

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		manufacture		
CBSE&P professionals will have to learn how to account for carbon using principles normally the preserve of accountants and economists	Definite/Likely But scale heavily dependent on speed and scale of growth in low carbon legislation and related enforcement	Small to moderate Growth in professional occupations is significant, but delivery may be offset by activity being delivered by associate professional technicians with the CBSE&P sector or actuaries and financial professionals from the Financial, insurance & other professional services sector and the Real estate and facilities management sector	Medium to long Requires level 4 or above qualifications	Critical to both Essential to the sector and long-term prosperity of the UK economy. Carbon accounting will provide a factual ground for carbon-related decision-making.
Associate professional technician roles				

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Technician roles Specific skills related to understanding and implementation of lean and agile construction principles and whole product/process lifecycle. The widespread adoption of BIM.	Likely/definite But dependent on the adoption of new technologies. Reduced operating costs resulting from more efficient on-site working and less rework might provide competitive advantage, which in turn may drive faster adoption. BIM will eventually become as commonplace as CAD.	Medium to large Professional occupations are forecast to grow by more than 25 per cent between 2010 and 2020 but delivery may be offset by activity being delivered by associate professional technicians working in the Manufacturing sector	Medium to long Requires level 4 or above qualifications	Essential to sector performance and delivery of UK low carbon targets, although over the long-term it may result in a decreasing demand for skilled trades
In addition to this an understanding of how new components will operate over the life time of a building, off-site manufacture of components will require	Likely	Medium	Medium to long Requires level 4 or above qualifications	Critical to both a) Developing a new core skill-set for the sector and b) Collaborative and lean working are essential to the delivery of the high priority low

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increased need for CAD/CAM trained building technicians to work on off-site design and application in factory conditions.				carbon growth sector
Skilled trades				
Skilled trade occupations	Definite Already skills shortages in some areas. Recession dampened demand in some areas, but demand forecast to rise from 2015 Migration has masked scale of deficiencies in domestic workforce in some areas Ageing workforces give rise to significant future demand	Medium Where questions over future demand, ageing workforce suggests significant demand still required UKESS 2011 shows that CBSE&P has an above average share of both HtFVs and SSVs as a percentage of all vacancies. Along with the Agriculture, Forestry and	Short to medium Requires Level 3 or above qualifications	Critical to CBSE&P sector and important more generally to the economy through supply chains Contribution to meet the needs of emerging priorities (i.e. Low Carbon, Infrastructure, etc.)

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	Future demand likely, but scale heavily dependent on government investment, levels of innovation to move UK to compete internationally and appeal of new products/services to private consumers and business e.g. low carbon Issues about perceived 'attractiveness' of roles to potential trainees yet important career pathway to technicians too	Fishing sector, CBSE&P are ranked in the top two on both these measures Ageing workforce likely The high levels of self-employment in the sector represent a significant barrier to upskilling		
Site supervisors and site labour will require an understanding of modern	Definite Changing products and processes are historically a	Large Skilled trades are forecast to increase by seven per cent	Short Requires specific product/process knowledge	Critical to CBSE&P sector and important more generally to the economy through the

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terminology, the ability to read, understand and follow instructions on new materials and components.	common feature of the CBSE&P sector and there is no suggestion that this will change moving forward	between 2010 and 2020, however a significant proportion of the current workforce (perhaps as high as 50 per cent) will need to acquire new knowledge/skills in relation to new materials and components	and short-duration/manufacturer training	delivery of Green Deal
Cross-cutting skills				
Employability and basic skills (communication, literacy, numeracy, team working, problem-solving) Particularly important for skilled trades and elementary roles Low carbon retro-fit and	Definite The presence of basic skills underpins the acquisition of specific job-related skills Current projects to retro-fit public housing have already demonstrated the need for such skills in terms of customer care.	Large UKESS 2011 shows that after job-specific/technical skills the lack of basic skills (particularly communication skills and customer handling skills) form a considerable component of SSVs in the	Short	Critical role to industry to enhance service quality

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refurbishment will result in increased interaction of site workers with customers The ability to read, understand and follow instructions on new materials and components.	This will become more of a priority as Green Deal is rolled-out, increasing the interaction between CBSE&P workers and the general public	CBSE&P sector		
High Performance Working (HPW) Provides a key means by which employers can maximise the potential of their employees and ensure their effective development and deployment, thereby making a positive contribution to productivity,	Possible/likely In the current climate the majority of organisations in the CBSE&P sector are focusing on survival and have neither the time nor the resources to explore the benefits of HPW and skills utilisation.	Medium Scale of potential adoption unknown Effects potentially pervasive amongst large-sized businesses and medium-sized enterprises to a lesser extent, but widespread uptake amongst micro and small enterprises will be	Medium to long	Important for achieving performance improvement in the CBSE&P sector and maximising productivity across the economy particularly as the competition for highly-skilled workers intensifies

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added-value per employee and profitability.		driven through the supply-chain		

8.3 Conclusions

Reflecting on the evidence-base and areas for priority action, at least five key messages emerge from this assessment:

Understanding and anticipating skills needs requires detailed intelligence

The need for relevant and accessible Labour Market Intelligence (LMI) is paramount in helping sector stakeholders understand the current situation and plan for the future. The production of this assessment has not only involved the compilation and analysis of existing research, it has also involved limited consultation with industry and stakeholders. What has emerged is that stakeholders need and demand sector specific LMI at much more granular level than even this assessment provides. This is particularly true of the Devolved Administrations. Certainly there is a need for a common methodology for collating, analysing and disseminating LMI, but comparability with other sectors is not paramount for all sector stakeholders, and this is particularly true for employers. Sector Skills Councils (SSCs) have a pivotal role in the delivery of detailed sector specific LMI.

Performance matters

The CBSE&P sector plays a pivotal role in the UK economy in terms of delivering and enabling significant levels of employment and strong economic output over the long-term. However, there is a body of evidence that suggests productivity in the sector lags behind other areas of the economy and compares poorly with other countries, particularly the United States. Recent research suggests that most companies in the construction industry do not recognise productivity as a priority; mainly because it is poorly understood. Nevertheless, research with the employers on this issue over the past 10 years very much supports the link between skills and productivity. Indeed, employees' skills can have dramatic impact on levels of performance in term of the volume and quality of output. However, it also highlights challenges in terms of establishing robust benchmarks that link the operational performance of businesses in the sector with macro indicators that allow consistent and meaningful sectoral and international comparisons.

Whilst there has been over the last decade a major drive to fix the problems by changing the way the industry operates there remains a need to support employer and industry competitiveness through up-skilling and improved levels of health, safety, competence and efficiency.

New markets present new opportunities

Responding to the Low Carbon challenge is fundamental to the future success of the CBSE&P sector. There is a need to clearly articulate the skills that will be needed and whether these sit within existing frameworks or where new frameworks need to be developed. Increased demand for specialist, technical and professional skills to meet high specification and low carbon requirements.

This assessment highlights the growing importance of professionals and technicians, driven by growing technological complexity. This calls for vocational knowledge and workers with the ability to apply an in-depth understanding of a particular (often technical) field in a practical setting. This, in turn, places a growing emphasis on strengthening the intermediate vocational career pathways (from Level 3) to ensure that the skill requirements for these jobs can be met and people can progress into these areas, perhaps from other related sectors (such as manufacturing) and through higher apprenticeships.

The present shapes the future

Like most sectors of the UK economy CBSE&P has an aging workforce. It has also suffered as a result of the recession, particularly in respect of large scale redundancies. Whilst many employers have striven to retain skilled staff and preserve capacity for the upturn, typically through reduced working hours, key skills have undoubtedly been lost through the significant numbers leaving the industry through redundancy and retirement. This could undermine the long-term stability of the sector in two ways. Firstly, there is significant excess capacity to be made up before future growth leads to increases employment. Secondly, the pool of unemployed workers will impact youth recruitment in an upturn as employers will typically seek out experienced workers before those without. Whilst the sector has been suffering the effects of the recession the numbers of young people coming through training has remained relatively buoyant, thus creating an oversupply of aspiring new entrants. The challenge on youth recruitment is to keeping the pipeline of talented new entrants flowing. This means creating opportunities for young people to join the sector whilst simultaneously promoting the sector to potential entrants. The ageing workforce and associated decline in the number of 15 to 24 year olds also means that we will increasingly be dependent in the future on up skilling older workers already in the labour market to meet our skills needs.

Skills and training matter

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’. The SSV and HtfV measures used in the UK Commission’s Employer Skills Survey (UK Commission’s ESS) (Davies et al, 2012) suggests that compared with other sectors CBSE&P has an above average share of both Hard to Fill (HTF) Vacancies and Skill Shortage Vacancies (SSV), as a percentage of all vacancies, although the incidence of skill shortages as employers perceive them has decreased significantly across the construction industry and is currently not considered a constraint on activity. However, it does raise other questions about the accuracy and validity of such measures. Research commissioned by ConstructionSkills has indicated that the contracting sector's perception of a skills shortage is not always consistent different from that conveyed by national skills surveys. In such surveys vacancies are regarded as a skills shortage vacancy if there are a low number of applicants with the required skills; applicants lack work experience; and applicants lack qualifications. However, it is often the case that when construction industry employers talk of skills shortages they refer to quite specific and short-run recruitment difficulties. These include not being able to get a particular trade on-site for a period on a self-employed basis rather than not being able to recruit an actual vacancy. The situation is similar for architects and other professionals (particularly the smaller firms), many of whom are working at the limits of their capacity – providing lead times for those who want to engage their services. In neither case does this constitute a skills shortage.

Accepting though that there are certain skills deficiencies within the sector the challenge is keeping in close contact with employers so that we understand their skills needs and shape solutions accordingly.

Appendix A: Technical Appendix

i. Summary

This report was written by ConstructionSkills Research Team (as detailed in section vii), each member of the team was assigned parts of the report (based on their specialist areas or particular pieces of research they were project managing) which they would be responsible for researching and writing.

The core data provided by the UK Commission (LFS data, ONS data, Working Futures etc.) provided a starting point for analysis of the basic characteristics of the sector. This data was examined for trends, patterns, similarities, comparisons and anomalies, and also quality checking based on statistical analysis and industry knowledge. Once this data had been analysed other research (existing industry/sector research and ConstructionSkills primary research) was used to supplement this data and turn it into intelligence, explaining trends/abnormalities etc. and identifying where action needs to be taken. The team held regular meetings to discuss the SSA and any issues that arose, this approach ensured that all members of the team were included in discussions and aware of decisions made as well as enabling us to track progress and content of the report. Once all of the sections where written they were combined to produce the full report.

Each member of the team carried out quality assurance checks on all of the data they used in the report to ensure that it met the robustness requirements given by the UK Commission, as detailed in section viii.

ii. Data Collection - Literature 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.

iii. Data Collection – Primary Data

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:

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

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

iv. Data Collection - The provision of core data

To ensure consistency and comparability across all 15 SSA reports, data from core labour market information sources was centrally collected, processed and formatted. It was then distributed by the UK Commission to Sector Skills Councils for inclusion within the reports.

Core data was centrally produced from the following sources:

- The Labour Force Survey
- The UK Commission's Employer Skills Survey 2011
- Working Futures 2010-2020
- Regional Accounts (information on Gross Value Added)
- Mid-Year Population Estimates
- European Continuing Vocational Training Survey
- Business Demography Statistics

Data from the Labour Force Survey, regional accounts and mid-year population estimates was collated, processed and formatted by Cambridge Econometrics and the Institute for Employment Research (IER), Warwick.

Data from the UK Commission's Employer Skills Survey 2011 was collated and processed by IFF Research and formatted by the UK Commission.

Data from Working Futures was collated, processed and formatted by IER.

Data from the European Continuing Vocational Training Survey and Business Demography Statistics was collated, processed and formatted by the UK Commission.

All data was quality assured by contractors, the UK Commission and by Sector Skills Councils.

It has been necessary to suppress some data within the reports to adhere to official guidelines regarding data quality. The details of suppression strategies applied to data from specific sources are described in more detail below. Data for Scotland, Wales and Northern Ireland for the three smallest SSA sectors is most likely to be suppressed. These are:

- Agriculture, forestry and fishing
- Energy production and utilities

- Information and communication technologies.

v. Methodology for Core data supplied by the UK Commission

Method used to derive estimates of gross value added (GVA) per employee job by SSA sector and nation

No official estimates are currently available for the level of productivity by sector and UK nation. The figures presented in this report have therefore been estimated by the UK Commission using the following process.

Levels of workplace gross value added at current basic prices by SIC 2007 Section were derived from the official estimates published by the Office for National Statistics as part of its Regional Accounts series. Levels of employee jobs were taken from the Business Register and Employment Survey for 2009.

The sectoral "footprint" definitions used as the basis for the SSA reports are not coterminous with SIC Sections, however, and in some cases draw on 2-digit SIC divisions. At present the official GVA estimates for nations and regions are only available at a SIC section level.

To overcome this an approach was adopted which has been developed by Welsh Government to derive gross value added estimates for its priority sectors. This approach was applied to the UK and all four nations. Approximate estimates of GVA at 2-digit level are available for much of the economy from the Annual Business Survey (ABS). These were used to allocate GVA at the 2-digit level with the results being constrained to the official GVA totals by SIC section taken from the Regional Accounts. For those areas of the economy not covered by the ABS, shares of employment at the 2-digit level were used instead, taken from the Annual Population Survey.

Labour Force Survey

About the survey

One of the key data sources used within this report is the Office for National Statistics' (ONS) Labour Force Survey (LFS). The LFS is a survey of households living at private addresses (plus in NHS accommodation and student halls of residence) in the UK.

The survey is carried on a quarterly basis. The sample is made up of around 41,000 responding (or imputed) households in Great Britain every quarter, and around 1,600 households in Northern Ireland. The LFS uses a rotational sampling design which means that, once selected; a household is kept in the sample for a total of five consecutive quarters.

Interviewers can take answers to questions by proxy if a respondent is unavailable. This is usually from another related adult who is a member of the same household. About a third of LFS responses are collected by proxy. Information on individuals aged 16 – 19 most likely to be obtained by proxy.

Full user guidance can be accessed here: http://www.ons.gov.uk/ons/guide-method/user-guidance/labour-market-statistics/index.html

Preparation of LFS data for this report

The UK Commission provided report authors with a core set of tables based on LFS data for mandatory inclusion within Sector Skills Assessment reports. The data within these tables was prepared by two contractors: Cambridge Econometrics (CE) and Warwick Institute for Employer Research (IER).

Data was prepared in three stages:

3 The original survey data was gathered and coded by IER to the categories and classifications required for the SSA tables. This was then sent to CE

4 CE used the data prepared by IER and derived the indicators and aggregated the data to the dimensions required for the tables

5 The UK Commission checked tables and distributed to report authors

Annual data presented within this report is based on an average of four consecutive quarters of data. Data prior to 2009 is based on SIC2003 and data for 2009 and 2010 is based on SIC2007 codes.

Reporting of LFS data

In line with ONS convention, annual LFS data presented within this report has been suppressed if individual cell sizes fall below 6,000. This is because cell sizes of fewer than 6,000 are deemed to be low quality estimates.

Analysis of employment uses all four categories of employments status within the LFS: employee, self-employed, government scheme & unpaid family worker.

Please note: some tables present a total for All sectors while others present a total for Whole economy. The values for these totals are different because the Whole economy total includes the 'Not within scope' category (i.e. sectors that don't fall within an SSA sector), whereas All sectors is the total for just the 15 SSA sectors.

UK Commission's Employer Skills Survey 2011

The UK Commission's Employer Skills Survey 2011 (UK Commission's ESS 11) was the first large-scale economy-wide employer skills survey to be conducted across the whole of the UK. The survey was managed by the UK Commission for Employment and Skills and was conducted by three contractors: IFF Research, BMG Research and Ipsos Mori (Davies et al, 2012). The project steering group included representatives from all four nation governments, the Alliance of Sector Skills Councils, the Department for Work and Pensions and the Skills Funding Agency.

Fieldwork was carried out from March to July 2011. Two waves of interviews were conducted. The main survey involved telephone interviews with approximately 87,600 employers and a follow-up survey focusing on investment in training was undertaken with over 11,000 respondents. The data presented within this report draws only on information gathered from the main survey.

The table below provides information on the number of employers interviewed by sector and nation for the main survey.

SSA sector	England	Scotland	Wales	NI	UK
Agriculture, forestry and fishing	1,270	99	133	45	1,547
Energy production and utilities	1,306	106	133	69	1,614
Manufacturing	6,774	182	470	350	7,776
Construction	7,538	300	660	463	8,961
Wholesale and retail trade	13,919	333	1,129	769	16,150
Transportation and storage	4,078	152	300	205	4,735
Accommodation, food and tourism activities	9,630	324	909	455	11,318
Information and communication	2,262	56	111	81	2,510

SSA sector	England	Scotland	Wales	NI	UK
Creative media and entertainment	3,301	99	227	135	3,762
Financial, insurance & other professional services	4,525	146	391	281	5,343
Real estate and facilities management	3,113	85	133	93	3,424
Government	2,078	163	188	176	2,605
Education	4,597	164	391	287	5,439
Health	2,912	107	242	137	3,398
Care	4,028	101	338	296	4,763
Not within scope	3,722	86	257	162	4,227
Total	75,053	2,503	6,012	4,004	87,572

UK Commission's ESS 11 is a quota survey. Quotas were set on a size by sector within nation / English region basis. In Northern Ireland and Wales, where more interviews were carried out than the required minimum to get national representation, they were predominately distributed in proportion to the population.

In order to include the maximum number of questions without extending the overall length of the interview, the sample was randomly split in half for some sections, and one set of employers were asked one module of questions, and the other half of the sample different questions.

The survey is a local unit (establishment) survey. This means that for large multi-site organisations several branches/ locations may have been interviewed. The establishment level sampling reflects that the survey asks employers about issues that need to be answered by people with day-to-day contact with employees rather than head office.

Respondents are those who have the best overview of HR and training within the establishment. This will tend to be HR or training managers in large establishments and owner/managers or senior managers within small establishments.

The valid population of establishments being used in UK Commission's ESS 11 is all establishments with the exception of sole traders (this means that establishments with one employee and no working proprietors (for e.g. flower stall at a station, where there is one person working but they don't own it themselves) are included). In addition, establishments with multiple working proprietors but no employees are also included.

Sampling error for the survey results overall and for different sub-groups by which analysis is presented in the report is shown in the table below. Sectoral figures are presented for the 14 SIC 2007 sections which were used for the survey sampling approach.

Figures have been based on a survey result of 50 per cent (the 'worst' case in terms of statistical reliability), and have used a 95 per cent confidence level. Where the table indicates that a survey result based on all respondents has a sampling error of +/- 0.32 per cent, this should be interpreted as follows: 'for a question asked of all respondents where the survey result is 50 per cent, we are 95 per cent confident that the true figure lies within the range 49.68 per cent to 50.32 per cent'.

As a note, the calculation of sampling error has taken into account the finite population correction factor to account for cases where we are measuring a significant portion of the population universe (i.e. even if two sample sizes are the same, the sampling error will be lower if in one case a far higher proportion of the population was covered).

These confidence intervals are based on the assumption of a normal distribution of responses.

Sampling error (at the confidence 95 per cent level) associated with findings of 50 per cent

	Population	Number of interviews	(Maximum) Sampling Error
Overall	**2,299,921**	**87,572**	**+/-0.32**
By country			
England	1,960,298	75,053	+/-0.35
Northern Ireland	65,559	4,004	+/-1.5
Scotland	175,114	2,503	+/-1.94
Wales	98,950	6,012	+/-1.22
By size of establishment			
1-4	1,466,397	18,955	+/-0.99
5-24	648,446	47,770	+/-0.61
25-99	147,319	15,951	+/-1.03
100-249	25,945	3,270	+/-2.27
250+	11,814	1,626	+/-3.12
By sector			
Agriculture	98,458	939	+/-3.18
Mining & Quarrying	2,222	188	+/-6.84
Manufacturing	128,255	7,704	+/-1.08
Electricity, Gas and Water	10,583	1,426	+/-3.35
Construction	241,429	6,654	+/-1.18
Wholesale and Retail	441,365	15,340	+/-0.78
Hotels & Restaurants	167,215	8,471	+/-1.04
Transport and Communications	210,801	7,885	+/-1.08
Financial Services	52,381	1,881	+/-2.22
Business Services	551,612	14,488	+/-0.80
Public Administration	26,058	1,617	+/-2.36
Education	65,499	5,439	+/-1.27
Health and Social Work	140,269	8,161	+/-1.05
Community, Social and Personal Services	163,774	7,379	+/-1.11

Looking specifically at sampling error for SSA sectors at national level, Agriculture in Scotland provides an illustrative example. 99 interviews were completed for this sub-group. Applying the assumptions outlined above, this gives a maximum sampling error of around +/- 10 percentage points. This demonstrates the indicative nature of the detailed survey estimates for smaller sectors.

Within the report, data based on unweighted bases of less than 25 have therefore been suppressed for quality reasons. In addition, data based on unweighted bases of between 25 and 50 have been marked as indicative. More stringent thresholds have been applied in Scotland because of the lower total number of interviews that were conducted than in other nations. Estimates based on unweighted bases of fewer than 50 have been suppressed, whilst estimates based on bases of 50-99 are marked as indicative in the relevant tables.

Finally, occupations within the survey are defined by 2010 Standard Occupational Classification codes and sectors are defined by 2007 Standard Industrial Classification codes.

Please visit the UK Commission's Employer Surveys website for further information including the full survey report and questionnaire. https://ness.ukces.org.uk/default.aspx

Working Futures

Working Futures 2010-2020 (Wilson and Homenidou, 2011) is the latest in a series of detailed projections of UK employment, productivity, labour supply and skills. The projections have been prepared by the Institute for Employment Research (IER) and Cambridge Econometrics (CE) on behalf of the UK Commission for Employment and Skills (UK Commission).

The projections are calculated from a number of different data sources, including the Annual Business Inquiry, the Business Register and Employment Survey, and the Labour Force Survey. The results provide a picture of employment prospects up to 2020 by industry, occupation, qualification level, gender and employment status for the UK as a whole, the four nations, and English regions.

As with all projections and forecasts, the results presented in Working Futures should be regarded as indicative of likely trends and orders of magnitude given a continuation of past patterns of behaviour and performance, rather than precise forecasts of the future. At a time of great uncertainty about the short to medium term prospects for the economy, it is important to stress the value of Working Futures in aiding understanding of likely prospects for employment in the longer term (i.e. in 2020). Readers should therefore focus on the relative position of sectors, and occupations in 2020 and treat the projected values as broad indicators of scale rather than exact predictions.

Further methodological details can be found on the UK Commission's website - http://www.ukces.org.uk/publications/working-futures-technical-report

vi. Data Collection – Primary Research Methodologies

BRE, Delivering Low Carbon Skills in Wales, Retrofit Learning Project (October 2011)

The aims and objectives of the research were to investigate the impact of retrofitting existing homes on skills needs. In particular it sought to identify the skills shortages and skills and knowledge gaps in delivering energy improvements to social housing stock in Wales. It was delivered by BRE.

Sample Frame and Sample Size

The research consisted of three phases, on site monitoring of a refurbishment project which involved fitting of new heating systems, including solar panels and air source heat pumps and external wall insulation, a workshop with key stakeholders and qualitative interviews with Sector Skills Councils and the Welsh Government.

Sample Strategy

The onsite monitoring process took place over a period of four weeks and data was collected using BRE's CALIBRE tool, this allowed for detailed data collection during working hours on site using a handheld computer, The CALIBRE tool was used to activity sample the processes on the housing estate. A work breakdown structure was used to define activities that were taking place according to added value, non-added value, support or statutory activities. Non added value activities are defined by the work breakdown structure that forms the basis for the activity sampling methodology using CALIBRE.

The Workshop discussed skills and qualification gaps prior to the project starting, during the project and future skills needed for sustainable retrofit. The discussions were based around two housing sites in Wales, one of which was the site where data was collected using the CALIBRE tool.

The final part of the case study concentrated on feedback from the Sector Skills Councils. Interviews were undertaken with representatives from the four Sector Skills Councils who delivered the Delivering Low Carbon Skills Programme; Asset Skills, SummitSkills, ConstructionSkills and Energy and Utilities Skills. The aim was to gain an insight into skills issues and priorities in sustainable retrofit with reference to the Arbed project when applicable.

Reliability

This research was undertaken with selected industry specialists and opinions expressed represent the views of individuals and are not necessarily representative of their organisation or stakeholder group as a whole

BRE, Delivering Low Carbon Skills in Wales, New Build Learning Project (December 2011)

This applied research project was commissioned by the Delivering Low Carbon Skills in Wales to investigate the impact of innovation on skills, focusing on low carbon new build skills. A specific aim was to identify skills gaps and skills/knowledge gaps evident in the construction of low carbon new build housing. The project was delivered by BRE.

Sample Frame and Sample Size

The research consisted of three phases, a period of on-site monitoring, stakeholder workshops and a literature review which included a previous pilot for the code for sustainable homes.

Sample Strategy

The onsite monitoring process took place over a period of four weeks and data was collected using BRE's CALIBRE tool, this allowed for detailed data collection during working hours on site using a handheld computer, The CALIBRE tool was used to activity sample the processes on the new build housing development which was being construction to code level 4 of the Code for Sustainable Homes. A work breakdown structure was used to define activities that were taking place according to added value, non-added value, support or statutory activities. Non added value activities are defined by the work breakdown structure that forms the basis for the activity sampling methodology using CALIBRE.

The first workshop involved key stakeholders from the delivery of low carbon building in Wales, including those who had taken part in the code pilot programme. It discussed skills and qualifications gaps relating to the delivery of low carbon new build projects delivery to the Code Standard. The second workshop focused on the product manufacturers and suppliers who shared issues and learning gained from their experiences of skills for the installation of their products on low carbon developments in Wales and the UK generally.

The final part of the research focused on feedback from other initiatives focusing on low carbon new build in Wales. Structured discussions were held with the Low Carbon Research Institute and Academic Expertise for Business representatives to gain an insight into skills issues and priorities in low carbon new build.

Construction Industry Council and ConstructionSkills, Impact of the Recession on Construction Professionals – A view from the front line. (2009)

The objective of this research was to provide an understanding of how the current recession was impacting on the UK professional services sector, including:

- How employers have responded to current changes in the economy; and
- To what extent employers are planning for future growth.

The research was carried out by Experian (Analysis of official data combined with Construction Skills Network data) and IFF Research Ltd (Primary research - Interviews and analysis). Interviews were held between 19 August 2009 and 19 October 2009.

Sample Frame & Sample Size

The sample frame was based on ConstructionSkills Employer Panel supplemented using Experian's database. The research involved an initial qualitative phase, involving 30 teledepths with firms within the professional services sector, followed by a quantitative survey of 301 professional services firms employing 5 or more staff across the UK.

Sample Strategy

For the quantitative phase, quotas were set to ensure a reasonable spread across the industry by region and size.

Topic Areas:

- Impact of the recession on the size and nature of the workforce
- Steps taken to meet the recession
- Any changes in the skills needed by the firm
- Extent to which the recession has impacted on recruitment overall and specifically on graduates
- The current volume of Built Environment graduates, including how many are seeking/have found employment in the sector & how many are likely to come through higher education in the medium term.
- Reliability
- The research involved 30 in-depth interviews with employers and a quantitative survey of 301 telephone interviews with professional services firms, the latter being conducted in the first half of October 2009. It is worth noting that statistical reliability on a sample size of 301 (in the worst case scenario from a reliability point of view of a survey result of 50 per cent) is +/- 6 per cent (i.e. we are 95 per cent confident that the true result, if views had been obtained from all employers rather than a sample, lies within 6 per cent of the survey finding). The statistical reliability is a lot lower where we report results among sub-groups of the sample (for example by region, size of employer or sub-sector, or where we look at results among those that have reduced staff numbers or taken particular action). In these cases results should be treated with some caution, and may best be regarded as indicative only.

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

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. This piece of work is undertaken by IFF Research Ltd and there are currently four waves per year.

Sample Frame and Sample Size

Wave 10 comprised 30 semi-structured qualitative interviews and 1,511 structured quantitative interviews (both conducted by telephone) with employers and the self-employed covering the traditional building sector (SIC 45) and Professional Services Firms (falling within SIC 74.2).

Sample Strategy

Much of the sample for wave 10 came from those agreeing at previous waves to take part in further research (overall 64 per cent of the 1,511 quantitative interviews were conducted with those who had taken part in earlier waves) supplemented with fresh sample from the same sources as described above. For the quantitative phase, quotas were set by region / country, and size (number of staff employed directly in the UK) and by whether they were in the Construction or Professional Services sector. Results for the quantitative element were then weighted to ensure that on these variables survey results were representative. (With the exception of the self- employed because of the huge numbers, see explanation in the reports introduction).

By region / country, there was intentional oversampling of the smallest regions to ensure close to 100 interviews were conducted in each. The weighting process then adjusted the regions back to their correct proportions.

Reliability

For the quantitative phase, quotas are set by region / country, size (number of staff employed directly in the UK) and by whether they were in the Construction or Professional Services sector. An overall target of 1,500 responses is set per wave of research, which provides a reasonable level of statistical accuracy (+/- 2.5 per cent on a survey result of 50 per cent based on 95 per cent confidence levels). The statistical reliability is lower where we report results among sub-groups of the sample (for example by region, size of employer or sub-sector, or where we look at results among those that have reduced staff numbers or taken particular action). In these cases results should be treated with some caution, but can largely be regarded as indicative of the issues in this sector as a whole.

Results (for the quantitative element) are weighted to ensure that on these variables survey results were representative. The one exception is the self-employed. Because of the vast number of self-employed, if these were weighted to their correct proportions the overall survey results would be completely dominated by the findings among this group. Hence they are weighted to a negligible proportion of the total sample (less than 0.5 per cent) and in effect where overall results are reported these are based on all employers (i.e. those currently employing other staff and hence excluding sole traders / the self-employed). However, results do specifically reference the self-employed, where this occurs these are based on approximately 100 interviews conducted among this group.

ConstructionSkills and Experian, Construction Skills Network, 2012-2016 (2012)

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.

Reliability

The Construction Skills Network (CSN) forecast against outturn was +2 per cent at the UK level and on average +3 per cent at the region / nation level. The results for the nations / regions ranged from -2 per cent to +9 per cent. These are well within the agreed performance limits for the UK (+/- 5 per cent) and all nations / regions (+/- 10 per cent).

ConstructionSkills and Foras Áiseanna Saothair (FÁS). Workforce Mobility and Skills in the UK Construction Sector (2007)

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. This research was carried out by BMRB Limited and in 2007 where interviews were held between February and July.

Sample frame and sample size

For the UK projects were selected from the Glenigan project database as this does not cover the Republic of Ireland the sample frame was based on those who attend Safepass awareness training. Face to face interviews with 3,877 workers across 312 sites in the UK/ROI

Sample Strategy

The sample was selected from the Glenigan database of construction projects. This database contained 39,993 records. The following steps were taken before selecting the sample:

• 1,040 sites with a value of less than £250,000 were removed

• 24,983 sites were removed because their contract stage was not ‘start on site’, ‘contract awarded’ or ‘bills called’

• 6,979 sites were removed because they were not due to be active during the fieldwork period.

This left a total of 6,991 sites which were eligible to take part in the research. The sample was then stratified by value and region. Ninety-nine postcode sectors were selected, and within each sector, six sites were selected, providing a total of 594 sites. An additional 860 sites were selected and held in reserve. During the telephone fieldwork stage, it became clear that due to a high level of ineligible sites and incomplete contact details (see section 1.5); all of the selected sites would be needed in order to achieve the target number of interviews. Therefore the reserve sample was added, increasing the total sample to 1,454 sites.

Reliability

In order to make the research representative, strict quotas were set on value of site and region. A total of 292 sites were visited in the UK. After excluding a small number of questionnaires which were unusable, a total of 3,621 questionnaires were completed. Eighty

per cent of the questionnaires were interviewer administered, with the remainder being self-completed. The results were not grossed or weighted. The total sample provides an acceptable level of statistical accuracy (+/- 1.6 per cent on a survey result of 50 per cent based on 95 per cent confidence levels). The statistical reliability is lower where we report results among sub-groups of the sample (for example by region, size of employer or sub-sector, or where we look at results among reduced demographic groups). In these cases results should be treated with some caution, but can largely be regarded as indicative of employment in this sector as a whole.

ConstructionSkills Skills and Training in the Construction Industry, 2011. (2011)

Topic Areas;

- Output Constraints
- Recruitment activity and difficulties
- Skills gaps and upskilling the workforce
- Workforce training and development
- Apprenticeships and recruiting young people

This research was undertaken by Babcock between February and April 2011.

Sample Frame and Sample Size

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). The sample frame was obtained by Babcock from Sample Answers Ltd using their UKBiz multi-source business database, filtered by ConstructionSkills SSC footprint definition (using SIC2007).

A total of 1,207 interviews were conducted via a quantitative telephone survey across the UK.

Reliability

The survey included sole traders / self-employed as well as employers, involved in construction contracting and professional services. Quotas were set to ensure that equal numbers of interviews were conducted in each of the nine regions of England, and the three remaining nations of the UK (Northern Ireland, Scotland and Wales), to provide an

appropriate base for simple regional analysis. Quotas also controlled the number of interviews conducted with establishments of various sizes, and for construction contracting establishments and professional services establishments. Targets over-represented large employers because of their low incidence, coupled with the large proportion of construction sector workers employed, thereby ensuring a sufficient base for confidence in the data collected. Weighting of data adjusted findings to represent the current profile of businesses in the sector.

Survey responses collected from employers were weighted using a matrix developed by interlocking data for employee numbers and region of businesses within the footprint SICs from the Inter Departmental Business Register (IDBR) 2010. While we explored applying a three-way interlocked weighting scheme which would also re-balance 'construction contracting' against 'professional services' within region and size band, it was agreed with ConstructionSkills that some weighting cells would be based upon small numbers of achieved interviews, and only make minor readjustments as the balance of interviews achieved in each sub-sector was very close to the true sub-sectoral splits.

Survey responses (from employers) were also weighted to represent employees for a small number of questions, and grossed up to represent all employees in the construction sector in the UK. An interlocking employee weighting matrix was developed using data from the Annual Business Inquiry (ABI) employee analysis (2008) for ConstructionSkills' footprint SICs. ABI data related to Great Britain only, hence the assumption was made that the profile of employees in Northern Ireland match the rest of the UK. Factors used for this employee weighting were the region/nation and the sub sector (construction contracting / professional services).

The total sample provides an acceptable level of statistical accuracy (+/- 2.8 per cent on a survey result of 50 per cent based on 95 per cent confidence levels). The statistical reliability is lower where we report results among sub groups of the sample (for example by region, size of employer or sub-sector, or where we look at results among reduced demographic groups). In these cases results should be treated with some caution, but can largely be regarded as indicative of employment and skills in this sector as a whole.

ConstructionSkills Training and the Built Environment (2011)

Topic areas

This annual project aims to measure the number of people entering construction training across Great Britain and covers these key areas:

- Attracting and retaining talent
- Developing talent
- Improving business performance
- Strengthening the skills infrastructure across nations

This research was produced in house by ConstructionSkills between February and March 2011.

Section 1: trainee numbers survey 2010/2011 presents data collected from colleges, private training providers and construction industry training centres across Great Britain on the number of people entering construction training. These include those coming through CITB-ConstructionSkills' own managing agency and those entering other formal certificated training at craft and technical level.

Section 2: forecasted demand for craft and technical construction training 2011–2015 analyses this training data alongside the projected demand for skilled construction workers over the forecast period 2011–2015 (using the ConstructionSkills & Experian Construction Skills Network Forecasts), in order to assess the adequacy of current training provision in terms of quantity.

Section 3: Construction Training Capacity 2010/2011 summarises the findings of the capacity questions from the Trainee Numbers Survey, which aimed to discover the total capacity for skilled manual trades training that is currently available.

Section 4: Higher Education in the Built Environment presents data from HESA on student enrolments on built environment degree courses in the academic year 2009/2010.

Sample Frame and Sample Size

The postal questionnaire is sent to all training providers across Great Britain (168 on this occasion) who provide formal certificated training at craft and technical level, identified through in house desk research and updated annually.

Reliability

This is an annual survey of training providers across GB, which provides a snapshot of entrants onto construction training. CITB-ConstructionSkills has collected data on new entrants on an annual basis for 30+ years, and the current survey has been running continuously for 20+ years. It is completely voluntary and participation relies on the goodwill

of training providers. No weighting is employed as part of the methodology. It does not claim to be representative of all training being undertaken, but it is the only data source available which provides up-to-date training data on an annual basis (i.e. data is available in the same year as new entrants start training). The results can be considered as being broadly indicative and outturn analysis against official data suggests that the survey provides a reliable indicator of trends within the sector as a whole.

ConstructionSkills, Understanding Future Change in Construction (2010)

The aim of this research is to establish an evidence base for ConstructionSkills on future skills across the construction sector. The research carried out by Pye Tait Limited, investigates the following areas;

- Innovation
- Renewables
- Zero Carbon
- Low Carbon
- Change
- Environment

Interviews were held between March and June 2010.

A multi-faceted approach to data collection was adopted, to gather data through a range of separate routes:

Phase 1 - Literature review

Phase 2 – Four 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

Sample Strategy

For the focus groups a wide range of stakeholders from all sub-sectors of the industry were invited to the events with the objective of gathering a broad variety of views from

all aspects of the industry; of those that agreed to attend, participants spanned employers, training providers, Assembly representatives, Government bodies (including Sector Skills Councils and Regional Development Agencies) and representative bodies.

For the individual interviews a wide range of organisations – spanning SMEs to larger companies - were asked to provide their views, in order to gain robust input from a representative sample across all sub-sectors within the construction industry. Of those that agreed to take part, interviews were carried out with 10 stakeholders based in England, 10 stakeholders based in Scotland and 9 stakeholders based in Wales.

Reliability

This research was undertaken with selected industry specialists and opinions expressed represent the views of individuals and are not necessarily representative of their organisation or stakeholder group as a whole

ConstructionSkills, Management & Supervisory Skills (2011)

The aim of this research is to:

- Identify, quantify and analyse the size, qualifications, training activity and skill needs of the management and supervisory workforce of employers represented by the construction federations, focussing particularly on innovation and sustainability
- Identify how managers' skill needs have changed and are changing over time
- Explore the impact that MSDP has played in supporting training

The research was carried out by IFF Research and interviews were held between November 2010 and February 2011.

Sample Frame & Sample Size

The research consisted of 22 interviews with federations, a quantitative structured telephone survey of 1,450 employers that are members of one of 20 federations covered by the research (listed in the report). A further qualitative survey was also undertaken which included 5 interviews with federations about specific projects for which they had received funding through MSDP, 8 employers who had attended MSDP-funded training that had been organised by federations and 7 employers that had received MSDP funding direct.

Sample Strategy

The sample of employers was initially drawn from CITB-ConstructionSkills' levy database. Part of the interview with each federation involved a discussion as to whether the number of employers this generated matched their membership figures or was sufficiently close, or whether their own membership lists were more comprehensive and could be used instead or alongside that provided by CITB-ConstructionSkills. Some federations passed on their membership list, in some cases their website listed their membership and this was used to supplement the list from the levy database or was used instead, and in others the federation contact checked the levy list to update it (e.g. with companies that had gone out of business).

Reliability

The quantitative survey involved telephone interviews with 1,450 employers that were members of the 20 federations covered by the research. This sample size provides a reasonable level of statistical accuracy (±2.6 per cent on a survey result of 50 per cent based on 95 per cent confidence level). The statistical reliability is lower where we report results among sub-groups of the sample (for example by region, size of employer or sub-sector, or where we look at results among those that have reduced staff numbers or taken particular action). In these cases results should be treated with some caution, but can largely be regarded as indicative of the situation in this sector as a whole.

Although the federations differ greatly in terms of the size of the membership, the aim was to achieve a broadly even spread of interviews across the different federations. The survey data was then grossed up to the approximate number of employers within each federation.

ConstructionSkills, Productivity in the Construction Sector (2011)

The objectives for the research are to identify and discuss the following:

- how firms define productivity and how (if at all) they measure it
- whether responses allow meaningful comparisons with the high-level indicators used by BIS and UK Commission
- how firms communicate with their workers about productivity and whether incentives are offered
- importance of productivity for firms, both on a project and overall basis, and what efforts are being made to improve it
- responsibility within firms for improving productivity and steps taken to achieve this

- split of responsibility for raising productivity between main and subcontractors
- events that have affected productivity levels within the industry over the past five years
- whether firms approach productivity in terms of competitive advantage
- willingness to work with clients, suppliers, and even competitors to improve productivity
- whether employees have the necessary skills and training to work in a more productive manner
- the role of the client and the process of competitive tendering in raising or lowering firms' productivity levels

The research was carried out by Enterprise Planning & Research Limited in 2011.

Sample Frame & Sample Size

Samples were drawn from the ConstructionSkills levy database and 20 depth interviews conducted with experts and contractors, a programme of 20 personal and 10 telephone depth interviews with decision-making directors and managers to explore in depth the issues surrounding productivity and 150 extended telephone interviews with construction managers and supervisors across a range of companies working in the construction sector.

Sample Strategy

In order to structure the sample, it was decided to use five categories of firm: civil engineering, housebuilders, general building, specialist trades and repair & maintenance (R&M). Samples were drawn from the CS levy database, split between the three CS size categories: large medium and small. The aim was to get equal numbers in each size category within each sector but this was not always possible. The sample was selected by taking every "nth" organisation from the lists.

Respondent organisations were then classified in terms of size (number of employees) and turnover.

Reliability

Due to the small sample size the results of this survey can be taken as indicative only.

Green Deal Skills Alliance, Research to Support the Development of a Green Deal Competency Framework, (2012)

The remit of the Green Deal Skills Alliance (GDSA), comprising the Sector Skills Councils ConstructionSkills, Asset Skills and SummitSkills, is to develop new training and accreditation for the energy assessment, advice and installation workforce. In 2011 the GDSA was awarded £500,000 of funding from the Employer Investment Fund (EIF) to build an infrastructure to support the implementation and delivery of the Green Deal.

The Green Deal is the Coalition Government's flagship policy for improving the energy efficiency of buildings in Great Britain and will be available from autumn 2012. It will establish a new financial mechanism to permit a range of measures, such as insulation, heating or lighting, to be installed in people's homes and businesses at no upfront cost. The Green Deal is based on the principle that many energy efficiency related changes to properties pay for themselves. Householders and businesses will be able to obtain finance to fund appropriate energy efficiency measures through the Green Deal, which will be paid back through the savings on fuel bills resulting from their installation.

The core aims of this research were to identify specific skills and knowledge that will be required by workers to deliver the Green Deal; assess the scale of the Green Deal workforce and the skills and knowledge they have compared with what is required; and to assess the capacity of training providers to deliver them. The work has also included an analysis of a number of Green Deal implementation scenarios and their likely impact on skills development. An additional requirement was to identify what could enable the supply chain to engage with and deliver the Green Deal. Finally the project has included an evaluation of six Green Deal pilot training programmes.

This work will provide data that will enable the GDSA to develop a Green Deal Competency Framework, National Occupational Standards and qualifications and training required to deliver the Green Deal.

The research was carried out by Pye Tait in 2011.

Sample Frame & Sample Size

This research commenced in September 2011 and had to be completed by the end of January 2012 to align with the timescales of the GDSA, for completing development of National Occupational Standards, qualifications and the Green Deal Competency Framework preparatory to its launch in October 2012. A combination of primary and

secondary research methodologies have been used to generate robust and comprehensive data to inform this report. Desk-based research at the outset of the project was carried out to establish detail around general policy and strategy linked to the Green Deal, drivers for climate change, skills and knowledge requirements for a low carbon economy already identified, and Government guidance as to how the scheme will operate which is captured within the report in Section 2.2 above.

Interviews subsequently took place with 38 industry stakeholders identified by the GDSA (see Appendix 2 of the report for details).

Against a background of significant change within the external environment at the time the research was taking place the employer survey gathered some 400 completions spanning respondents in England, Wales and Scotland. An online survey was also developed for training providers. It was recognised that only informed respondents would be capable of providing reliable and valuable feedback and we found that there were very few in the provider realm who felt sufficiently knowledgeable to respond with confidence. Nevertheless we acquired good feedback from twenty five providers across the sample target-frame (contact details were supplied by the GDSA).

Sample Strategy

The sample frame for the employer survey was developed in conjunction with the GDSA and was designed to span all GDSA sector footprints where business activities were in scope of the Green Deal process as described above. Table 2 below shows the activities and Standard Industrial Classification (SIC) codes used to develop the sample frame.

The table below shows the SIC codes and business activities in scope to this research.[51]

[51] The sample frame also included Asset Skills business activities of 'renting and operating of own or leased real estate' or 'management of real estate on a fee or contract basis' however where interviews took place within these sub-sectors respondents had extremely limited knowledge and understanding of the Green Deal and the majority were unable to provide detailed responses thus when establishing the size of the workforce these activities have been excluded.

Lead SSC	SIC 2007 code	Business Activity
ConstructionSkills	41.20	Construction of commercial and domestic buildings
ConstructionSkills	43.29	Other construction installation
ConstructionSkills	43.34	Painting and glazing
ConstructionSkills	43.91	Roofing activities
ConstructionSkills	71.11; 74.90[52]	Architectural activities; Other professional, scientific and technical activities n.e.c
SummitSkills	43.21	Electrical Installation
SummitSkills	43.22	Plumbing, heating and air conditioning
Asset Skills	N/A	Energy assessment and advice

Of the 400 respondents to the employer survey, over half were SMEs with between 1 and 10 employees, reflecting the high proportion of SMEs that comprise the sector footprints for this work. Just over 90 per cent of organisations interviewed operated from one single site, with just 8 per cent having multiple sites.

Concurrently evaluation was undertaken of six Green Deal pilot training programmes, which were developed in conjunction with the GDSA with the main objective of testing initial draft qualification units. These units were developed by the GDSA in conjunction with an expert steering group including employers, training providers and representatives from the Department of Energy and Climate Change (DECC). Pilots were delivered by providers identified by the GDSA that had capacity to test out the training. Training took place towards the end of 2011 in the following locations: Kilmarnock (Scotland), Liverpool, Tredegar (South Wales), Taunton, Crumlin (Northern Ireland) and London.

Reliability

This research was undertaken with selected industry specialists and opinions expressed represent the views of individuals and are not necessarily representative of their organisation or stakeholder group as a whole

Report Availability

[52] SIC 2007 codes 71.11 and 74.90 are grouped together in this and subsequent Tables. This is because the employer survey contacts were selected using SIC 2003 categories where these activities are combined.

All ConstructionSkills reports (except the Employer Panel and Productivity in the Construction Industry, which are unpublished) can be accessed from ConstructionSkills website at http://www.cskills.org/sectorskills/researchfromssc/national_reports.aspx.

vii. Data analysis and interpretation

The Sector Skills Assessment brings together bespoke analysis of existing data (provided by UK Commission to all SSC's), which includes data from the following sources;

- Labour Force Survey
- Office for National Statistics
- Inter-Departmental Business Register
- Annual Survey of Hours and Earnings
- Employer Skills Survey
- National Employer Skills Survey.

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.

For this report this analysis was combined with the results of research commissioned by ConstructionSkills, as well as a wider 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).

This Sector Skills Assessment was compiled by ConstructionSkills Research Team (Lee Bryer, Kirsty Woolsey, Adam Evans, Martin Turner, Karen Hazleden, Ian Hill and Emma Link), with contributions from SummitSkills. Each member of the ConstructionSkills research team took responsibility for a section and for researching that particular area.

viii. Quality Assurance

Quality assurance was carried out throughout the compilation of the report starting with the data supplied by UK Commission which each team member was responsible for checking the data to be used in their section. The checks applied included statistical analysis and checking of totals (to ensure they added up to 100) as well as sense checking them with sector knowledge and/or other research. For data not supplied by UK Commission each

researcher was responsible for ensuring that the data used adhered to the guidelines set by UK Commission regarding sample size, robustness and representativeness. Where data was used that was based on small sample sizes or could not be taken as representative this was clearly stated. Further to this the team held fortnightly meeting where any issues relating to the report and data could be discussed action to be taken could be agreed by the team, ensuring that everyone had an input to and was aware of decisions made regarding the report and handling of data.

Further quality assurance of the report as a whole has been undertaken by the team to ensure continuity, fluidity and accuracy of the report and data contained within it.

Further detail to be added by UK Commission.

Appendix B: ConstructionSkills Footprint, SIC 2007

Definition of the ConstructionSkills sector, 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
43.2	**Electrical, plumbing and other construction installation activities**
43.21	Electrical installation
43.22	Plumbing, heat and air-conditioning installation
43.29	Other construction installation
43.3	**Building completion and finishing**
43.31	Plastering
43.32	Joinery installation

43.33	Floor and wall covering
43.34	Painting and glazing
43.34/1	Painting
43.34/2	Glazing
43.39	Other building completion and finishing
43.9	**Other specialised construction activities n.e.c.**
43.91	Roofing activities
43.99	Other specialised construction activities n.e.c.
43.99/1	Scaffold erection
43.99/9	Specialised construction activities (other than scaffold erection) n.e.c.
SIC 71	**Architectural and Engineering Activities; Technical Testing and Analysis**
71.1	**Architectural and engineering activities and related technical consultancy**
71.11	Architectural activities
71.11/1	Architectural activities
71.11/2	Urban planning and landscape architectural activities
71.12	Engineering activities and related technical consultancy
71.12/1	Engineering design activities for industrial process and production
71.12/2	Engineering related scientific and technical consulting activities
71.12/9	Other engineering activities (not including engineering design for industrial process and production or engineering related scientific and technical consulting activities)
71.2	**Technical testing and analysis**
71.20	Technical testing and analysis

Appendix C: Glossary

Glossary of Acronyms

ABI	Annual Business Inquiry
ASHE	Annual Survey of Hours and Earnings
BIM	Building Information Modelling
BIS	Department for Business, Innovation and Skills
CAD	Computer-Aided Design
CAM	Computer-Aided Manufacturing
CERT	Carbon Emissions Reduction Target
CESP	Community Energy Saving Programme
CIC	Construction Industry Council
CSN	Construction Skills Network
DCLG	Department for Communities and Local Government
DECC	Department of Energy and Climate Change
EEPH	Energy Efficiency Partnership for Homes
EPBD	Energy Performance of Buildings Directive
EPC	Energy Performance Certificates
EU	European Union
FIT	Feed in Tariff
GDP	Gross Domestic Product
GVA	Gross Value Added
HVAC	Heating, Ventilating, and Air Conditioning
ICT	Information and Communications Technology
IDBR	Inter Departmental Business Register
LFS	Labour Force Survey
LMI	Labour Market Intelligence
MAC	Migration Advisory Committee

MMC	Modern Method of Construction
NI	Northern Ireland
NVQ	National Vocational Qualification
ONS	Office for National Statistics
PFI	Private Finance Initiative
PQQ	Pre-Qualification Questionnaire
R&M	Repair and Maintenance
SIC	Standard Industrial Classification
SME	Small and Medium-sized Enterprise
SOC	Standard Occupational Classification
SSA	Sector Skills Agreement
SSC	Sector Skills Council
SVQ	Scottish Vocational Qualification
UK Commission	UK Commission for Employment and Skills
UKCG	UK Contractors Group
UK Commission's ESS	United Kingdom Employer Skills Survey for England
VAT	Value Added Tax

Glossary of Terms

Term	Description
Craft trades/occupations	Refers to skilled trades/occupations 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

Term	Description
	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.

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UKCES
Renaissance House
Adwick Park
Wath-upon-Dearne
Rotherham
S63 5NB
T +44 (0)1709 774 800
F +44 (0)1709 774 801

UKCES
Sanctuary Buildings
Great Smith St.
Westminster
London
SW1P 3BT
T +44 (0)20 7227 7800

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