ConstructionSkills

Market Assessment for
the Construction Industry

Contents

Section Two: Changing Skill Needs (continued)

Introduction

The purpose of this report is to provide a comprehensive assessment of the UK construction industry, its performance and its skill needs for the future. It covers all areas of the industry (including construction contracting and professional work) in both Great Britain and Northern Ireland.

The assessment is designed to inform the plan produced by ConstructionSkills, the new partnership between CITB Great Britain, CITB Northern Ireland and the Construction Industry Council, for future workforce development. The plan is called the Business Proposition.

This assessment focuses on market pressures and performance issues faced by the construction industry, and the skills it needs to meet these demands. The report concludes with a summary of the main themes and a note about information gaps and areas for future research. Key charts and tables are provided in Appendix A and Appendix B respectively.

Since this is the first such assessment for the construction sector, inevitably it draws on pre-existing sources of information, all of which are referenced to enable more detailed scrutiny. They are drawn principally from the three ConstructionSkills partners and we are grateful for their contributions.

Section One: Market Pressures and Performance

1.1 Sector definition

ConstructionSkills covers a wide range of sectors in the development and maintenance of the built environment. It represents around 7% of the national economy in terms of GDP and includes:

	% of new work
• Housebuilding (Public and private)	23%
• Infrastructure (Roads, railways, utilities)	20%
• Non-residential building in the private sectors (Schools and colleges, hospitals, offices)	14%
• Industrial building by the private sector (Factories, warehouses)	10%
• Commercial building by the private sector (Offices, shops, entertainment, health and education)	33%

In addition, the sector covers repair and maintenance work in all sectors (which makes up 47% of all construction activity). Chart 1 gives a detailed breakdown of construction output by type of work.

As well as work performed by construction contractors, the sector covers:

- Renting of construction machinery
- Professional and design work in consultancies (engineering, architecture and surveying)

It does not cover those doing construction work in other sectors, for example, public administration, real estate or building engineering services (plumbing and electrical contracting).

The full coverage is detailed in Table 1 using the Standard Industrial Classification[1].

1.2 Sector characteristics

Construction is a national industry spread across all parts of the United Kingdom. It is vital in both contributing to the national economy and in providing the essential infrastructure to support other sectors. Concentrations occur in urban areas and, in particular, London and the South East which together account for 32% of UK output. The full picture of output by area is shown in Chart 2.

For the UK as a whole, the sector covers over 2 million[2] people. Excluding electrical wiring and fitting and plumbing (SIC 45.33), just over 1.8 million people are employed in the construction contracting sector (SIC 45). A further 225,000[3] are employed in professional consultancies (SIC 74.2).

There are 175,000 companies in construction in the UK, excluding consultancy practices. Nearly 99% of construction companies employ fewer than 50 people and these account for approximately 60% of total employment in the industry. Less than 1% of companies employ more than 250 people but these account for 22% of total employment. In terms of construction output, large companies account for approximately half of all work done while small companies account for nearly one third[4]. See Tables 2a and 2b.

Professional work outside SIC 45 (mainly architecture, engineering and surveying) is conducted by approximately 23,500 private practices and partnerships in the UK. Most of these are small firms that employ fewer than 10 people. Only 3% employ more than 50 people[5].

Construction work is almost entirely done on a project-by-project basis whereby contractors will draw together teams of workers who usually work together for a short period of time and then move onto another location or disperse. Much of the work is managed by a 'main contractor' who deals with the client but who subcontracts parts of it to smaller firms that specialise in a particular aspect of the process. Large projects are often tendered for on a regional or national basis by companies that are based at a distance from the actual site and have to assemble a workforce either in the locality or by transporting in their own. This temporary and itinerant working pattern, where decisions are delegated to a local level, is a special feature of construction and obviously presents a challenge for maintaining and improving the skills base, and for human resources management in general.

In terms of occupational structure, manual workers dominate and they represent 73% of the total (including carpenters & joiners, bricklayers, painters & decorators). The remaining 27% are non-manual workforce (including managers, professionals and office staff).

The workforce in the construction industry continues to be largely white and, except for clerical and other non-manual occupations, male dominated. By 2002, the share of non-white employment was approximately 2% compared with approximately 6% for the economy as a whole.

As regards gender split, women accounted for approximately 9% of total employment in the industry, but only 1% of manual employment and 30% of non-manual employment. A more detailed analysis of demographic factors can be found below, in **Drivers of sector change**.

The age profile of the construction labour force is similar to the age profile of the labour force in the economy as a whole. However, the percentage of people aged 30-39 is slightly higher in construction. This is due to low recruitment during the mid-1990s in the 16-24 age group and may cause problems in the long run and lead to an ageing population in the industry. See Charts 3, 4 and 5.

1.3 Drivers of sector change

This section considers the factors that drive change in the industry and how these factors have, in turn, changed over the past 10 years.

1.3.1 Economic factors

The economic environment and, in particular, levels of demand for its products, has had a profound influence on the UK construction industry. Historically it has suffered substantial swings in the levels of activity following a pronounced economic cycle. The industry reached a peak in output and employment in 1989, which was followed by a prolonged downturn which lasted until the mid 1990s. During this period, between a quarter and a third of the workforce were laid off and many companies ceased trading. Activity levels have been recovering over the last seven years and, in 2002, both output and employment were, in real terms, back to the peak of the 1990s.

Within the overall pattern, swings within particular subsectors (such as housing, roads and commercial) have been even more pronounced and both companies and workers have had to move between different markets in order to survive.

In 2003, prospects for the domestic construction market are mainly positive. The housing sector remains buoyant and the Government has said that it is committed to allowing further growth, particularly in the South East. Also, a substantial medium-term programme of public sector projects, some funded by public private partnerships (PPPs), is in place for the next few years. However, prospects for new commercial building are threatened by weakness in the rest of the economy. So, while overall activity levels for the domestic industry look good, companies and the workforce within that market may still expect some volatility.

In recent years the UK construction industry has also improved its performance in international markets. While overseas work done by UK construction companies fell by a quarter in the latter half of the 1990s, it increased by nearly one-fifth in 2001[6].

This upward trend is expected to continue. According to a recent report published by International Financial Services, the UK is better equipped to deal with public private partnerships than other countries. This comparative advantage should help British companies to gain further contracts overseas[7].

1.3.2 The national market and customer needs

Although industry fortunes will always be subject to fluctuations in demand, effort is being made to help construction better manage the situation and so improve its capacity and performance. An important part of this is attempting to gain a greater understanding of market needs, and to develop longer-term relationships with both customers and suppliers.

Some mainly larger companies have made progress towards better client orientation and supply chain management, and there is evidence that this has led to an improved financial position[8]. In addition, a new initiative was launched in November 2002 to help the industry by carrying out market research on its behalf.

The Government is becoming an increasingly important client for the industry as it is committed to making partnerships between the public and private sector work, and wants to see improvements in public services and infrastructure. The private finance initiative (PFI) and public private partnership (PPP) frameworks are seen as playing an increasingly important role in fulfilling these objectives.

The introduction of PFIs and PPPs has led to a transformation of the roles and responsibilities of both the public and private sectors. Government bodies are moving from being owners and operators of assets to being clients purchasing long-term services. Similarly, in having to adapt to accommodate these frameworks, the construction industry has moved from adversarial one-off contracts into 'whole-life' maintenance and facilities management. Consequently, as companies become more capable of entering into frameworks, where payment depends on the level of the service, the ability to measure performance becomes the key in proving the success of an organisation.

The capacity to take on some of these new roles (for example, market research, innovation, partnering and facilities management) will be a problem for a highly-fragmented industry. It will require better co-ordination and an improvement in standards and performance throughout the supply chain. Clients will increasingly expect to see evidence of standards and capacity and it seems highly unlikely that the industry can continue with its 'no barriers' to entry approach and, as regards the workforce, no evidence of skills or qualifications. Not all subsectors of the industry will be affected in the short term; domestic housing repair and maintenance, and small works in rural areas will be slower to change. However, there is already movement towards groupings of small contractors under umbrella organisations with brand names – such as the AA – to provide marketing and ensure standards are met for customers – which seem likely to grow.

Another major development in the domestic market is the provision of affordable housing, which is now seen as top priority by the Government. Therefore, up to the end of the decade, the major problem facing the industry may be how best to work with the Government to provide affordable housing in the areas of greatest shortage. The task is made more difficult by the Government directive that greenfield sites should only be used if brownfield sites are not available. This seems to result in fewer houses being built on greenfield sites without a corresponding increase on brownfield sites. Housing completions were at an all time low in 2001; 135,000 were completed, but 220,000 are needed each year to eliminate the housing shortage[9] [10] [11] [12].

1.3.3 Government regulation

For the construction industry, the Government is doubly important as both a legislator and as a major client. There is a balance to this relationship in the UK since, without a strong and effective construction industry, the Government will not be able to fulfil its electoral obligations[13].

The trend in governments across Europe is to increase their intervention in the way business operates. The construction industry is under legislative pressure from all levels of government[14], including:

- European Government, particularly in employment legislation
- the UK Government, particularly in the improvement of public services
- the devolved Governments in economic redevelopment
- at local level, particularly in planning.

The policy priorities that are likely to have the most impact on the construction industry[15] are broadly summarised as:

- the focus on improving public services
- the introduction of procurement frameworks and measurement of best value
- employment legislation such as the working time directive and health and safety
- procurement directives and laws relating to open tendering; sustainability and environmental impact
- consultation with employees and works councils.

The construction industry has suffered from a poor public image and a poor safety record. Between 1 April 2000 and 31 March 2001, there were 114 fatal injuries in the construction industry[16]. Consequently, health and safety remains a key theme for both the Government and the construction industry. One move by the industry to address issues of poor safety has been the implementation of the Construction Skills Certification Scheme (CSCS). This requires those entering construction sites to hold a card showing they have the skills to operate safely on site. Further health and safety legislation will lead to a greater demand for tactical skills to deal with site safety and strategic skills to design safer sites. Site managers will increasingly need better skills in ensuring each operative is aware of the dangers and capable of avoiding and minimising them. Professionals will need to gain a greater appreciation of health and safety issues to ensure that sites are designed to remove the risks[17].

With regard to environmental issues, the introduction of the climate change levy and associated changes to the building regulations to improve the environmental performance of materials and structures, has affected the nature of many construction products and processes. Regulatory drivers of change have played a central role in improving the energy efficiency of materials, increasing the elimination of waste from the construction process and estimating the 'whole-life' cost of structures. Also, the introduction of the landfill tax in 1996 and the aggregates levy in 2002 has placed particularly stringent requirements on the disposal and recycling of materials.

A principal skills change required in dealing with regulations will be the ability to predict, understand and interpret legislation. The construction industry and its constituent companies will need to be more aware of law, how to monitor it and when to act on it. It is likely that this will result in the companies having to gain skills in, and knowledge of, environmental and employment legislation.

The increased need for legal skills in the management of a construction business will also have to be filtered down to site level, through construction managers and site managers, to ensure the correct interpretation and practical implementation of more complex regulations[18].

1.3.4 Technological trends

New technologies and innovations are generally adopted if, and only if, there is a sympathetic set of business, legislative or cultural conditions[19]. Indeed, sensitivity to economic fluctuation, along with increased regulation and strong market pressure, has meant that the construction industry has had to invest in technology in order to meet its customers' and regulators' expectations.

Previous under-investment in research and development resulted in sporadic technological change and a failure to sustain an innovation culture. However, a period of sustained growth, underpinned by a severe labour and skills shortage, has resulted in an increased need to improve competitiveness and productivity through technology and innovation.

Whilst designers of buildings, proactive clients and manufacturers of materials and components have been instrumental in initiating technological change and innovation, the current labour and skills shortage has perhaps proved to be the biggest catalyst for technological change.

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

In 2001, the total market for UK prefabricated buildings was estimated to have grown by around 7% on the previous year[20]. Increasing levels of investment and government expenditure in this technology is expected to sustain a similar level of growth in the mid term, and ensure that it features prominently in future construction programmes.

Prefabrication serves as a catch-all term for several approaches to off-site manufacturing, which includes modular building and pre-assembly, but stands apart as being the one area of technological change and innovation that has the potential to involve and impact across many markets and occupations within the industry. The aim of prefabrication has been to take out many of the uncertainties of construction and prepare as much as possible off site, in a controlled environment, to allow greater control of quality and cost, and to mitigate some of the problems of skills shortages and labour supply.

Significant technological developments have also seen the adoption of new materials, including composites and plastics such as fibre reinforced polymers (FRPs), specialist adhesives, resin-based cements, self-compacting concretes (SCCs), solar glazing in heating, fibre optics and light-emitting diodes in lighting. A recent report published by Composites Worldwide Inc. forecasts strong future growth of the FRP composites market. The 'Infrastructure Composites Report 2001' forecasts that the infrastructure sector of industrial markets for current and emerging FRP composite applications will grow by more than 500% between 2000 and 2010[21]. Glass fibre will see the greatest growth, followed by carbon fibre, unsaturated polyester resin (UPR), vinyl ester and epoxy resins.

The development and growth of biotechnology, especially in land remediation (on brownfield sites), is a prime example of how the construction industry has increasingly looked out of sector for solutions to the new challenges it faces. Similarly, the introduction of sensing and monitoring technology, not only within the construction process but also within actual buildings, has represented a significant crossover into science and engineering sectors. The continued development of wire-free electrical installations and nanotechnology will further sustain this interface, and more generally characterise the increasingly multi-disciplinary approach to technological development.

Advances in information communications technology (ICT) also represent a major opportunity for the construction industry. Wireless application protocol (WAP) technology, palm pilots, personal digital assistants (PDAs), video systems and more compact laptops are enabling technologies to deliver knowledge and information to the user in the exact location of use[22]. The resulting flow of information will be faster and more effective, enabling design, planning and procurement to contribute towards better quality, higher productivity and reduced costs. Computer simulation and 3-D modelling will also enable the further integration of design into the supply chain and will increasingly play a role in predicting the whole life use of buildings[23].

The current and continued development of heavy and hand-held plant follows the established trend to limit the manpower/number of operatives required to perform traditionally labour-intensive tasks, with the majority of innovation occurring in powered access, trenching, cladding, tunnelling and cutting. Technical innovation in excavation plant means that machines are now available to excavate in restricted areas and to very accurate specifications. Recent developments have seen partnerships between contractors and plant suppliers to produce site-specific solutions to excavation and lifting.

Whilst it is impossible to say that any one innovation alone will have a greater impact on the industry than another, prefabrication as a collective development will almost certainly be the focus of renewed attention. This is because prefabrication is ultimately seen to bring the highest cost and quality benefits through economies of scale, increased productivity and improved consistency.

1.3.5 Demographic changes among consumers and the workforce

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

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

Whilst the rate of population growth in the UK is low and decreasing over time, the rate of household formation is comparatively high and is increasing[24]. This disparity is primarily due to the breakdown of the traditional nuclear family and a consequent reduction in average household size from 2.91 in 1971 to 2.33 in 2001[25 26]. The tendency for the young to become independent at an earlier age, higher rates of divorce and a marked increase in single-parent families are key contributing factors. The net effect of these demographic changes is a rise in the demand for homes, with around 80% of the predicted increase comprising single-person households[27].

Indeed, the proportion of one-person households has risen from 17% in 1971 to 31% in 2001[28].

It is estimated that 220,000 homes are needed each year in the UK, yet only 135,000 were completed in 2001[29]. This clearly indicates the scale of the increase in production which must be sustained if future demands are to be met, and further demonstrates the vital role construction plays in fulfilling the expectations of both the Government and society as a whole.

The UK, like other industrialised countries, has an ageing population. Advances in life expectancy mean that successive generations are living much longer. This not only affects what they might demand, but also what the construction industry can provide in terms of the built environment.

The age profile of construction employment has undergone significant change over the past 10 years. For both manuals and non-manuals in the industry, the workforce has been distinguished by a sharp decline in the share of the younger age groups in total employment and an analogous rise in those aged 30 years and over. See Charts 4 and 5.

The ageing of the workforce, both for manuals and non-manuals, can partly be attributed to the decline in recruitment during the early 1990s. However, demographic changes in terms of the decreasing size of the family unit and more young people staying on in full-time education after the age of 16 are also contributing factors. For example, in the UK, family size fell from 2.93 children in 1963, to 1.74 in 1990 and 1.64 in 2001. This is compounded by the Government's ambitious target of 50% participation in higher education, a trend that further limits the pool of available labour from which the construction industry is able to recruit.

The ageing workforce also poses a problem with regards training capacity. A longstanding trend towards early retirement, together with reported difficulties in the recruitment of teaching staff[30], means that questions must be asked not only as to whether the current training capacity is able to cope with the expected intake of prospective trainees, but also who will train the trainers of the future.

Construction has traditionally been seen as a white, male-dominated industry. Results from the Labour Force Survey confirm this image. The employment of women within the construction industry workforce fell from 11.7% in 1992 to 9.3% in 2002, and is still much lower than the 44.8% working within the population as a whole[31]. Looking at the split between manual and non-manual, women accounted for 1.7% of all manuals in 1992, falling to 1% in 2002; and 36.5% of all non-manuals in 1992, falling to 30% in 2002[32].

Within the non-manuals there is a marked concentration of women in administration, clerical and secretarial occupations, which have traditionally attracted women. However, it is interesting to note that over the past decade these occupations have experienced marked fluctuations in the numbers in employment and, more generally, a long-term decline in the size of their occupational share. Whilst data from the Council for Administration (CfA) points towards more stability in the future proportions of these occupations within construction, and the share of women filling these roles, it is worth considering previous trends and how they have influenced current requirements. Changing working practices, new technology and the cultural climate have all played a major part in shaping the administrative occupations as they stand today, and it is expected that they will be equally influential in the future. The tendency for more and more office-based staff to undertake their own administrative tasks (primarily brought about by the IT revolution) is one area that could lead to a more apparent decrease in future requirements[33].

However, the changing role of the administration, including specialisation towards finance or sales, also means that fewer people will be categorised as administrators[34]. Consequently, whilst the number of administrators employed within construction is more likely to decline than increase, due in part to fewer recognisable administration job titles, it will probably be accompanied by a comparable rise in the numbers entering related occupations[35]. This is an area of conjecture, but clearly presents the opportunity for further cross-sectoral work between ConstructionSkills and CfA.

The proportion of ethnic minorities in construction employment has gradually risen from 1.5% in 1992 to 2.4% in Spring 2002. However, this is still significantly lower than the 6.3% present in the total working population[36]. Looking at the split between manual and non-manual occupations, ethnic minorities currently account for 2% of all manuals, and 3.2% of all non-manuals[37]. The percentage of manuals actually increased from 1.3% in 1994 to a high of 2.2% in 2000 and the percentage of non-manuals from 1.5% in 1994 to a high of 3.1% in 1998. Whilst this has since fallen back slightly, it has remained relatively stable and encouragingly exhibited some long-term growth, particularly in the professional and sales occupations.

As there are more women in the population than men, and ethnic minorities are expected to account for half the growth in the workforce over the next ten years, these groups will form an increasingly important share of the labour force. Consequently, attracting new workers from these groups must remain a priority.

1.3.6 Sustainable development issues

The Government's sustainability strategy is expected to have a major impact on the construction industry and vice versa. The principle of protecting the environment by adopting sustainable construction policies emerged from the 1992 Earth Summit in Rio and the subsequent 1997 Kyoto Summit. The Rio Summit produced the Climate Change Treaty, a commitment from participating nations to reduce greenhouse gas emissions, and Agenda 21, which encouraged participating countries to develop national sustainable development strategies at local and national government levels.

In the UK, Agenda 21 found a voice through the Government report 'A better quality of life: A strategy for sustainable development for the UK' (1999) and subsequently made its way into the construction industry via the Department for Trade and Industry (DTI) publication 'Building a Better Quality of Life: A strategy for more sustainable construction' (2000).

Government action to promote and encourage sustainability has already included a revision of the building regulations and the introduction of the Planning Policy Guidance Note 3 in 2000, the climate change levy in April 2001 and the aggregate tax introduced in April 2002. Collectively, these legislative measures have encouraged the use of brownfield sites, energy efficiency, waste management, recycling and a general consideration of whole-life costs.

The increasing requirement for construction solutions to be sustainable is also a driving force for technological change and innovation. Consequently, the development of new products and processes now takes into account environmental impact, durability and performance in addition to the more established concerns of aesthetics, workability and cost.

1.4 Current competitiveness and performance issues in the sector

The industry is currently experiencing a period of strong growth (estimated to be 7% per annum for 2002) and expects demand to remain buoyant in most sectors for the next few years. However, this current situation was preceded by a long period of subdued activity when profit margins were low or non-existent, many companies ceased trading and much of the workforce was forced to find employment elsewhere.

During this period, most companies (with a few notable exceptions) did little in the way of improvements to productivity through, for instance, training, research and development, supply chain integration or health and safety. Consequently, as the workload has increased, capacity in the industry is becoming stretched, and this is apparent in reports of skill shortages and rising costs including wages. Although profit margins have increased, it is widely accepted that to sustain margins and compete with the international world-class companies entering the UK market, increases in productivity must be made.

Some of these increases will come naturally, through new products and processes. This will improve productivity, providing the workforce has the skills to adopt and providing customers are content. However, perhaps because of volatility in demand in the past, the UK construction industry is weak and fragmented, comprising a large proportion of small contractors, with poor supply chain integration and little strategic management. The stock market shares this view and sees the industry as having few tangible assets and, despite current levels of profitability, not particularly suitable for future investment.

One way forward is through greater integration within the industry and the development of longer-term relationships, including those with customers. The advent of public private partnerships, where contractors become involved in the running of property and buildings after their construction phase, offers this opportunity. Levels of demand can be more sustained (and peaks of activity avoided), allowing firms to invest in their businesses and develop a more stable and qualified workforce.

Productivity in construction measured in output per employee shows a long-term trend of 3% growth per year. In effect this means that 3% growth in output is required to keep the size of the workforce static. However, in the short term, productivity has fluctuated through the business cycle and, most recently, industry leaders have made a concerted attempt to make permanent gains and provide better value to customers[38].

To assist this process the industry has developed a series of national initiatives guided by three influential reports: 'Constructing the Team', 'Rethinking Construction' and, most recently, 'Accelerating Change'. New organisations under the title of the Movement for Innovation and the Construction Best Practice Programme have been formed, involving more than 1,000 companies, to stimulate change in the industry through 'Demonstration Projects' and sharing good practice.

As well as encouraging innovation in technical and business aspects amongst contractors, their clients and their suppliers, a particular focus is placed on workforce development through the 'Respect for People' initiative. Its aims include an improvement in health and safety, a more diverse workforce, and an improvement in the levels of skills and training. Implicit in this last aim is the recognition that modernising the industry involves bridging a skills gap between what is available now and what is required to be competitive in the future. There is some concern that not all companies are aware that they face such a 'latent' skills gap and the first step in the process must be to heighten awareness in this area.

To demonstrate the challenge, a set of key performance indicators has been framed which, over time, will allow progress towards these goals to be tracked. Evidence is available (www.kpizone.com) for the last four years and, overall, improvements have been noted in most indicators.

However, analysis shows that the most improvement has been made in companies involved in modernisation. There is also a wide variation between innovative companies and the rest. This suggests that the main challenge will be to raise the poorest performers to the levels of the best. Reliable data is not yet available on international comparisons of productivity, but reports[39] suggest that the best UK companies compare favourably with their European counterparts.

Section Two: Changing Skill Needs

2.1 Employment patterns and skill demands

2.1.1 Employment: the current situation

Increasing construction output over recent years has been accompanied by steady increases in construction employment (SIC 45) which reached just over 2 million by Spring 2002 (as measured by the Labour Force Survey). Over the same period, the share of self-employment decreased from 45% in 1996 to approximately 31% in 2000. See Chart 6. This was partly caused by a change in taxation arrangements by the Inland Revenue, and partly by a view amongst some companies that direct employment was preferable. However, the trend was halted in Spring 2002 when there was a small increase in the number of self-employed people in the industry. The share of self-employment in the construction industry remains well above the national average across all sectors (approximately 11%).

In 2002, there were approximately 230,000 construction professionals working outside SIC 45 while approximately 90,000 worked for contractors. Over the period 1985-2002, the number of all professionals in the built environment varied between 300,000 and 400,000, reaching a maximum in 1990. The regional differences in output noted in Chart 2 are reflected in differences in regional employment. For example, construction employment in the South East is four times higher than in Northern Ireland. See Chart 7.

Construction is essentially a national industry, although two separate labour markets co-exist. On the one hand, there are localised markets with very small boundaries within which individual workers are willing to move. On the other hand, there is a national labour market with individual workers willing to move from one region to the other to fulfil specific contracts. Traditionally, the movement has been from North to South, with skilled northern operatives travelling to the South to work on specific projects and possibly returning home once the project is finished.

For professional work, the concentration in the South East and London is even more pronounced. In 2001/2002, of the total £12.3bn fees earned by professionals, the South East and London combined accounted for over half. The North West followed with £1.82bn. All other areas were below the £1bn mark[40].

This situation is likely to persist in the near future as training continues to be relatively more widespread in the northern regions than in the southern regions, while earnings continue to be higher in London and the South East than in other parts of the country.

Construction is often perceived as a low pay industry with poor working conditions. However, in terms of relative pay, wages for manual occupations are above the national average. See Table 3. Moreover, in recent years, earnings in the industry have increased at a faster rate than in the rest of the economy.

Improved remuneration and working conditions should work together to attract more people into the industry and alleviate skill shortages. Recent surveys indicate that recruitment difficulties are widespread in the construction industry, but the most up-to-date employment figures suggest that the workforce has grown significantly in 2002. Obviously there is concern about the skill levels of these new entrants, some of whom are from abroad, but it does appear that the market is able to respond to demand in terms of absolute numbers.

2.1.2 Skill shortages

Across all countries in the United Kingdom – England, Northern Ireland, Scotland and Wales – the construction sector is currently experiencing skill shortages. In a survey (Autumn 2002) across Great Britain, 79% of companies said they had experienced difficulties in recruiting skilled staff in the previous three months[41].

Analysis of vacancies reported by employers also highlights the extent of skill shortages in the construction sector. According to the DfES Employers Skill Survey 2002, vacancies in England represent a higher proportion in construction (3.9%) when compared with the economy as a whole (3.1%). Vacancies can be distinguished between those that are 'hard-to-fill' and those that are hard-to-fill for skill-related reasons, categorised as 'skill-shortage' vacancies. Across the United Kingdom, the construction sector accounts for a high number of both these types of vacancy. For example, in Scotland, construction was one of the six sectors that accounted for two-thirds of skill-shortage vacancies and one of the industries to have the largest number of hard-to-fill vacancies (1,800)[42].

In England, across all sectors, 'skilled trades' account for 8% of the overall total of unfilled vacancies, but they represent 13% of hard-to-fill and 19% of skill-shortage vacancies.

Vacancies for 'skilled trades' were heavily concentrated in construction with almost two-thirds of skill-shortage vacancies and 60% of hard-to-fill vacancies[43]. In Northern Ireland, craft and related occupations account for 67% of hard-to-fill vacancies in the construction industry. Plasterers, carpenters & joiners, bricklayers and general labourers presented the most difficulty[44].

Great Britain faces a similar situation with carpenters & joiners, bricklayers, plasterers, professionals and managers presenting the most difficulty. However, in terms of long-term vacancies, the pattern highlights general labourers, plant mechanics, plant operatives, clerical staff and supervisory staff, along with managers and professionals. These are all occupations that typically form part of a company's permanent workforce, as opposed to those who may normally be hired on a project-by-project basis. Looking at occupations where vacancies are remaining unfilled (arguably the most acute areas) the picture changes again to highlight plant mechanics, plasterers and roofers.

A possible pattern emerges as follows. If companies are asked which occupations present most recruitment difficulties they will mention carpenters & joiners and bricklayers – who are most numerous in the workforce. However, when asked about vacancies (as opposed to normal project-by-project recruitment), they will refer to their core workforce members including clerical staff, supervisors, labourers and plant mechanics. These vacancies may not however be hardest to fill (for example, clerical staff) whereas others (such as plasterers, roofers and plant mechanics) are causing the most severe difficulties. Generally, in thinking about skill shortages, it would be helpful to bear in mind differences between the volume of shortages, as opposed to intensity of difficulty; and the way in which construction companies recruit temporary as opposed to permanent staff[45].

2.1.3 Current skill gaps

A skill gap is said to exist when members of the existing workforce lack the necessary skills to do a job despite having formal/informal qualifications.

Throughout the UK, construction employers do not rate skill gaps as a particular problem for existing employees. In both Great Britain and Northern Ireland, only 15% of construction employers reported skill gaps in their existing workforce. For instance, in Great Britain, the majority of employers (85%) were satisfied that their existing employees were able to cope with current requirements, including dealing with new technology, new construction methods and/or new materials[46]. Where skill gaps were reported, they were a mix of vocational and generic skill gaps[47] [48] [49].

While the existing workforce across the United Kingdom did not have a particular problem with skill gaps, in Great Britain, approximately 50% of participating employers reported problems with new employees who, although trained and qualified for certain occupations, still lacked a variety of skills required. This response is not surprising since new trainees will need to do some 'on-the-job' training even if formally qualified. This is probably more so in the construction industry than in other sectors[50].

2.1.4 Employment: expected changes

Given the relatively buoyant outlook for the industry, construction employment is expected to continue to increase at a steady, albeit moderate, rate over the next five years.

According to CITB's Employment Model, if there is an average annual growth rate of 2% for construction output over the period 2003–2007, employment in the 'built environment' (i.e. including construction professionals not classified to SIC 45) is expected to reach 2.5 million by 2007. Substituting a 3% annual average growth rate for construction output, the corresponding forecast is for employment in the 'built environment' to reach 2.65 million by 2007.

Within SIC code 45 (excluding SIC 45.33), the largest occupation is carpentry & joinery followed by managers, office staff and bricklayers. See Table 4. Some movement is expected in the occupational shares over the period 2003–2007. However, change is expected to be moderate, continuing the trend of the past ten years.

Within professionals, the largest occupation is civil engineering followed by quantity surveying and building surveying. See Table 5.

In terms of occupational shares, carpentry & joinery has remained fairly stable around the 14% mark. For the main trades, there have been modest decreases for bricklayers, painters & decorators and plasterers, while plumbers (including heating and ventilating engineers) and electricians have increased slightly. Managers have also increased while, in recent years, clerical staff have tended to decline. These trends are expected to continue over the next five years, although it is expected that the increase in the share of electricians will be moderate as a result of productivity gains through technological change and product development[51].

2.1.5 Replacement demand

Replacement demand is created by people who leave the industry due to retirement from the labour force (either temporary or permanent) or by moving into other sectors. Because of replacement demand, new people are needed to join the industry even if there is no increase in employment demand, i.e. if total employment is expected to remain unchanged.

The most important elements of replacement demand are retirements and deaths. The ageing of the workforce since the early 1990s will therefore result in a higher replacement demand in future years.

However, there is considerable labour mobility in construction with individuals moving between jobs within and outside the industry as well as becoming temporarily unemployed. It is therefore necessary to take into account the need to replace individuals who leave the industry for other sectors. Moreover, in recent years, a higher percentage of individuals have joined construction from other sectors than have left the industry. When calculating expected replacement demand, this trend needs to be taken into consideration.

2.1.6 Trends in qualification requirements

The industry's commitment to create a fully qualified workforce is an ambitious but necessary step if it is to meet the changing market of needs and government targets whilst reflecting best practice, competence and diversity.

The relatively large number of qualifications available within construction wholly reflects the diversity of the occupations within the industry. These range from degrees, National Certificates and National Diplomas for the professional and technician areas through to vocational qualifications for craft operatives.

Although many workers, particularly within the manuals, claim to have experience and training (for example, through trade apprenticeships), relatively few hold formal certificates of qualification. Furthermore, construction has become known as an industry where an enterprising individual, after acquiring a skill 'on-the-job' can set up on their own account and then enter into substantial contracts – for example, building a house, direct with the customer. The lack of any barriers to entry has meant standards of work have been variable, the industry's reputation has been poor, and progress and modernisation in the sector hampered[52]. Registration under the Construction Skills Certification Scheme (CSCS) and the On-Site Assessment and Training (OSAT) scheme will address this and help the industry move towards its goal of a 'fully qualified workforce'.

However, professional areas within the industry, particularly construction and project management, where vocational qualifications are rarely used, probably pose the biggest challenge with regards the qualification of the workforce and the provision of practical experience. Whilst the number of construction graduates has declined over the past five years, there is an increasing need to attract high-calibre personnel to the industry to replace the existing workforce and to satisfy increased labour requirements. Consequently, the industry must ensure that construction and project managers, particularly those from a non-construction background, not only have the ability to work within a uniquely prescriptive industry, but also the practical experience. There is a need for further investigation into the number of graduates entering the construction industry, where and how they are deployed, and the methods of qualification and assessment.

The development of construction GCSEs is also seen as a positive step in increasing the routes of entry into the industry, at an earlier stage than the current academic system allows.

2.1.7 Trends in skill requirements and skills use

To improve productivity and competitiveness, the workforce must be able to operate within an increasingly complex environment[53]. Better performing products and processes resulting from this need will require the skills of the workforce to change. Some old skills will be displaced completely, some new ones created, and other existing skills will need to be adapted[54].

Innovation can be seen as both cause and effect; new methods can reduce the demand for trade skills and, conversely, the lack of skilled supply can stimulate new methods. Both investment in innovation and technology, together with labour and skill shortages, have implications for the industry's existing and future skills requirement[55].

The shift towards prefabrication is likely to mean that on-site construction increasingly becomes more of an assembly process, suggesting that the industry will see a move from fabrication to fitting. Prefabricated components and assemblies, designed for ease of installation as well as improved performance and cost, will enable greater output from a smaller workforce[56]. This has a particular significance for both manual and non-manual occupations. Prefabrication and off-site manufacturing have further implications for manual occupations. This is because their size and scope encompass such diverse occupations and, secondly, their skills and training are built around fervently demarcated craft traditions with a largely bespoke approach to construction.

The future trend towards prefabrication will increasingly see trades move to a factory environment; a move that whilst creating good working conditions will be resisted by some[57]. This signals a debate on where the workforce to create prefabricated units will come from – the construction sector or the manufacturing sector – and what skills they will need.

If it is the construction sector, as anticipated/proposed, this will inevitably result in the erosion and revision of some traditional trade boundaries and the introduction of a more generalist or multi-skilled approach to the construction process. Whilst current prefabrication technology certainly draws upon traditional craft skills, a factory-based approach, as employed in the manufacturing sector, will probably result in operatives performing tasks that would traditionally be associated with other trades[58]. It will also require new skills of production control and quality control as the approach to construction becomes more mechanised[59]. In this respect, technological change will offer the opportunity to redefine a number of existing roles within the industry, as well as offering opportunities in new areas.

Growth in prefabrication also has particular consequences for the non-manuals as the supply chain broadens and integration between design and production increases. Architects and designers will need to work more closely with suppliers and contractors to integrate new materials into the design. Construction managers will need to make more use of information technology to schedule work, and will require the necessary interpersonal and business skills to enable collaborative working amongst multi-disciplinary teams[60]. It is also reasonable to assume that a need for quality control skills will almost certainly become apparent as more and more components are manufactured off site.

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

To achieve faster construction times, process mapping and improvement will supplement traditional project management skills[61].

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

Management and supervisory skills will become increasingly important. Improved business management, personnel and training will be required to support changes in industry structures and technology[62].

Traditional cost and accounting skills will need enhancing with value engineering. New estimating skills are needed that encompass risk management evaluation and whole life costs[63].

Many of these changes have, of course, already begun, and will continue in an evolutionary way to affect how tasks are performed on site and what skills are required of the workforce as a whole. The challenge for the construction industry and ConstructionSkills is to ensure that upskilling of the existing workforce is balanced with the need to attract new recruits.

2.1.8 Generic skill needs

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

Whilst good practical skills and the ability to work accurately, carefully and methodically are primary requirements for the craft operative, there is also a need for increasingly better levels of literacy and numeracy on site. In addition to these basic skills, the proliferation of information technology and the rise in off-site manufacturing suggests that communication and organisational skills will be essential. New skills of production control, assembly and quality control will also be required to handle a more mechanised approach to construction.

Similarly, for managers, increasingly complex supply chains and site processes will require improved organisational, communication and IT skills. Dealing with the issues of collaborative partnership and multi-disciplinary approaches throughout the supply chain will require greater use of interpersonal and business skills associated with team building and management. A wider understanding of client needs will call for more market research and analytical skills[64].

The increasing prevalence of IT and electronics in products and processes has led to an explosion in the volume of data generated. Consequently, all involved in the construction industry will need to increase their capacity to collect and assimilate data[65].

Given the increasingly international nature of the industry, there will be a greater need for cultural awareness and language skills.

The move to a more sustainable approach to construction will require operatives to have an increased understanding and appreciation of energy efficiency, waste management and recycling issues. This will manifest itself in the 'greening' of site practices with the sorting of waste materials[66].

There is also the particular emphasis on health and safety. The continuing high level of fatalities and injuries in construction is being addressed in part by the introduction of the Construction Skills Certification Scheme (CSCS). However, good housekeeping practices on site will be instrumental in improving the industry's performance.

It is widely recognised that the industry needs to improve its image and the quality of its marketing skills. Creating good relationships with the general public is paramount, especially if the industry is to attract new recruits. Every member of the workforce, whether manual or non-manual, is not only a representative for his or her employer, but also for the industry as a whole. Consequently, good social skills and a respect for people should be taught as part of the educational process and further encouraged in the workplace.

2.2 Skills supply and training for employment

2.2.1 Skill levels in the industry

According to official figures[67], approximately two-thirds of construction workers[i] have a qualification at NVQ Level 2 or equivalent, approximately one-half at Level 3 and approximately 15% at Level 4 or equivalent. See Table 6.

When compared with other sectors, construction falls significantly below the public utilities and 'white collar' sectors but above transport, agriculture and distribution.

It should be noted that qualifications shown at the various levels include those obtained at school, such as GCSEs and 'A' levels. The proportion of employees holding specific vocational qualifications, e.g. NVQs or SVQs, is considerably lower in all industries. For construction, only 5% have an NVQ. Other qualifications are not specifically 'vocational' and, therefore, are not to be treated in the same way. However, as increasingly higher skills are demanded by the modern construction industry, it seems likely that higher levels of literacy, numeracy and general education will also be required as a base on which to increase productivity.

Construction has one special feature in that it has high levels of 'trade apprenticeships'. Overall, 41% of the construction workforce claims to have completed an apprenticeship, but only some will have documentary evidence of this. This figure is higher for skilled trades occupations at 56%, and is significant even for managers. See Table 7.

There is some evidence of regional variation in skill levels across the nation. London and the South East in particular, because of the concentration of head offices of construction firms and professional practices, has a higher overall level of skills. This is also true in Scotland, where employers have decided that the minimum level of skill for a craft job will be Level 3, rather than the Level 2 accepted south of the border. In this respect, Scotland is more comparable with the position in other European countries, where construction industry workers have a higher overall level of qualification than in England[68].

[i] Figures refer to construction (SIC 45). Figures for professional practices are not yet available, but are likely to show higher levels of skill.

2.2.2 Training supply

Throughout the early 1990s the number of first-year entrants on construction training in Great Britain fluctuated between 30,000 and 35,000, which was down by around 10,000 on the pre-recession level of the late 1980s. After reaching a low point of just over 29,000 in 1997, numbers have since increased strongly with 1999 seeing numbers climb above 40,000 for the first time since the late eighties. Growth has since continued albeit at a reduced rate of increase. It should be noted that during the 1990s the industry underwent a prolonged period of low activity, with a contracting workforce and low levels of recruitment. Since 1998, levels of training have recovered as the industry continues to grow. Northern Ireland has witnessed a similar pattern, with fluctuations in the number of enrolments on construction courses in further education courses between 1994 and 2000. Overall, however, there has been almost a 2% increase in the number of enrolments within this time period.

The overall first-year intake in the United Kingdom in the academic year 2001/2002 was 49,309. This comprises 40,508 (82%) new entrants in England, 4,024 (8%) in Scotland, 2,578 (5%) in Wales and 2,199 (4%) in Northern Ireland. Significantly, these proportions are equivalent to the share each country has of the total construction employment in the United Kingdom (see Chart 2).

As with previous years, carpentry & joinery and bricklaying dominate the first-year training figures with 15,604 (33%) and 8,402 (18%) of the total respectively in Great Britain and 1,696 (52%) and 593 (18%) in Northern Ireland. Analysis of the countries within Great Britain show that, whilst this is also the case in England, in Scotland and Wales carpentry & joinery and technical occupations have the highest number of first-year starters.

In Great Britain, 38% of the 47,110 first-year trainees were on apprentice-type training, an increase of 30% on 2000/2001. The term 'apprentice' is used here in its widest sense in that it covers not only those on Modern Apprenticeships, but also anyone who is both new to, and employed in, the construction industry. In 2001, there were approximately 1,919 new entrants through Jobskills apprenticeships and ELMAs in Northern Ireland, an increase of 72% from the previous year.

By analysing the training figures in Great Britain by broad geographical areas, the northern areas of England (North East, North West, Yorkshire and The Humber, and the Midlands) have increased their share of training in 2001/02. Training in Scotland, the South of England (South East, South West, East and London) and Wales has remained broadly static since the previous year.

In England and Wales, around 20% of vocational qualifications are taken at Level 1, in Scotland it is only 11%. Also Scotland has 37% of starts on Level 3 compared with 26% in England and Wales[69] [70].

2.2.3 Training in the workplace

The traditional pattern of training for construction has been one where individuals are expected to acquire the bulk of their skills at the beginning of their careers – typically through a trade apprenticeship for school leavers. This continues to be the most common form of formal training and acquiring formal qualifications, and it is recorded in the numbers going through college courses, often on a day or block release from employment.

Estimates of the extent of company learning include formal training 'off the job' (usually in college) – and also training undergone by the whole workforce, which is often done 'on the job' and only sometimes leads to a formal qualification. Survey data suggests that on average between two and three days are spent by each employee on 'off-the-job' training each year, at a cost to employers of between £200 and £300. 'On-the-job' training amounts to six days per employee per year, at an average cost of around £600. Surprisingly, levels of training in construction companies are a little higher than the average across all industries. Larger companies are, on the whole, more likely to be involved in training, although there is a significant number of very small construction companies who have their own apprenticeships (training averages for these firms are naturally very high). Formal training for apprentices, leading to an NVQ, will comprise a broad range of technical and other skills. By contrast, the great majority of training for the adult workforce in construction is in health and safety matters – a top priority for the industry[71] [72].

In Northern Ireland, there were 1,859 construction trainees in 2001, accounting for 4% of the workforce. This includes trainees attached to formal training programmes as well as those undergoing work-based training.

One of the major issues facing the Northern Irish construction industry is to increase participation in training and learning throughout the industry, in particular for both adults and smaller construction organisations. Adult participation in training is needed to upskill the current workforce, of which a significant proportion falls into the older/adult age categories, many of whom have not participated in formal training programmes since leaving school. Small organisations often discard the idea of training due to issues such as costs, location and time involved.

At present, one mechanism CITB (NI) is using to encourage employer participation in training is the development of Skills Development Programmes (SDPs) with levy payers. SDPs examine the current qualifications of all employees and labour-only sub-contractors within the organisation and recommend the training to be undertaken so that individuals can carry out their job roles more effectively and efficiently, with particular emphasis on health and safety training. The Skills Development Programme started in 1997 and a review of the programme in 1999 showed that 71% of companies contacted had taken part in training since participating in the initiative[73].

2.2.4 Training at professional level

The main disciplines of study for the construction industry are:

- civil engineering, architecture
- building/construction
- environmental technology
- town & country planning.

Except for architecture, over the past five years the number of students (UK residents) starting degree courses in these disciplines has either declined or remained unchanged. See Chart 8.

The percentage of females varies from 15%-20% for both civil engineering and building/construction to 25%-30% for architecture and 30%-50% for environmental technology and town & country planning[74].

The employment opportunities for construction graduates improved considerably during the second half of the 1990s. An increasing number of construction graduates found employment six months after graduation while the number still seeking employment declined. See Chart 9. Moreover the percentage finding employment at the graduate level also increased between 1996 and 2001. See Table 8. The current tightness of the labour market is further confirmed by the downward trend in unemployment among graduates.

The decline in the numbers starting degrees courses and the consequent decline in graduate output over the next three years is therefore a cause for concern.

2.2.5 Staff development

CITB's Employers Skill Needs Survey sought to establish the importance of in-house training and promotion compared with recruiting from other companies, either in the construction industry or in other sectors.

Employers were asked what percentage of their staff they trained and promoted from within, as opposed to recruiting from other construction companies or from non-construction companies. The question was asked for managerial, professional and operative recruitment. The results show that recruitment from other construction companies is most common, followed closely by trained and promoted from within. Recruitment from outside the industry is relatively rare.

These results are consistent with the results from the Labour Force Survey, which show an annual inflow into construction from other industries of between 4% and 5%.

2.2.6 Investors in People

According to figures from IiP UK, construction firms that are either recognised as, or committed to, Investors in People employ 14% of employees in the construction workforce. This figure is lower than other industries and it is partially explained by the relatively high proportion of small companies in construction since, in general, it is small companies that are less likely to be IiP[75].

2.2.7 Future training needs

As outlined earlier, college craft training continues to be dominated by the main trades (carpentry & joinery, bricklaying and painting & decorating). Training for civil engineering and specialist building trades, such as roofers and plant mechanics, continues to be largely 'on-the-job' training with only a minority of new entrants attending college courses.

According to forecasts from the CITB Employment Model, for all trades there is a gap between the number of individuals trained each year and the number who need to join the industry for supply and demand of skills to be in balance. However, the gap is much wider for civil engineering and specialist building trades. Thus, while college training needs to be expanded for all trades, it is particularly important to provide for training in certain key areas.

At the professional level, training has, with some exceptions, been slow to recover from the low levels of the 1990s. There is mounting concern over the need to try and boost entrance to first-year construction degree courses and improve retention of qualified individuals.

However, there are signs that companies are, either by design or necessity, looking beyond the traditional 'construction' degrees for their higher level recruitment. Graduates of finance and business studies, etc., are entering construction management jobs that would previously have been filled by construction graduates. There is also a growing recognition of the need for cross-professional and general management skills amongst this group in the future[76].

2.2.8 Training provision and qualifications structure

The UK construction industry relies heavily on public provision of education and training to help meet its skill requirements. Formal training for new entrants at craft and operative level almost always involves an element of 'off-the-job' training, which is conducted on a day or block release basis at around 300 colleges of further education that are spread across the country.

Similarly, construction professionals are mainly drawn from degree courses in architecture, surveying, and engineering, etc., provided on a full-time basis at around 30 higher education institutions. Recently, concern has been expressed about the numbers of students being attracted onto these courses. Between 1994 and 2000, applications declined by 45%[77] and several courses have closed. Possible reasons for the decline include a lack of attractiveness of the industry (with its reputation for being volatile), and the decline in those doing maths and science at 'A' level. Employers finding themselves short of graduate recruits are beginning to consider taking on non-construction graduates to fill their general management positions.

The quality and content of courses is always under scrutiny, but mechanisms are in place to enable employers to influence provision. When asked, employers were mostly satisfied with provision (see Chart 10), with reservations usually regarding funding and location of courses, inclusion of generic content (e.g. key skills) in addition to the core technical aspects. At both craft and professional level, there is pressure to broaden course content to include elements from other occupations (called 'multi-skilling' at craft level and 'interdisciplinary knowledge' for professionals).

However, formal training for new entrants only fulfils part of the requirement. Employers spend at least as much time and money on 'on-the-job' training, both for new recruits and for their existing workforce[78]. Employers say that on-the-job training is necessary[79] as new recruits lack the experience and skills needed to make them work-ready. This becomes an acute problem when trainees have only been on full-time courses. For the existing workforce, employers need to ensure that their staff have the necessary certification for working on sites and the new skills to keep up with changing technologies, etc. Because of the itinerant, project-by-project nature of construction work, public provision in this area is difficult to manage for the site workforce. CITB's On-Site Assessment and Training (OSAT) scheme is being developed to address this. ('On-the-job' training is less of a problem for office-based staff and continuing professional development is well established for professionals.)

A further requirement is for training staff in the 'non-construction' aspects of their work. Provision is much more fragmented in this area, with companies having to source training either internally or from a wide variety of providers, covering clerical, sales and administration, as well as for the various business professionals. A general concern in construction is the level of basic skills in the workforce. Having traditionally regarded itself as an industry with 'a place for everyone', construction is now faced with a more competitive environment where basic skills and qualifications are a prerequisite. Relatively little help is available in these areas specific to construction industry needs, although funding and advice is provided through the Small Business Service, Learning and Skills Councils and CITB.

Section Three: Summary Assessment

3.1 Summary

Changes in the construction industry, combined with the need to rethink traditional building methods, have significant implications for the learning and skills required by those who work in and with the industry, as well as those who provide education and training.

Although profit margins have increased, it is widely accepted that to sustain these margins and compete with the international world-class companies entering the UK market, increases in productivity must be made. The UK construction industry is seen to be weak and, since it comprises a large proportion of small contractors, highly fragmented, with poor supply chain integration and little strategic management. The advent of public private partnerships, partnering, whole-life maintenance, new materials, pre-fabrication, information and communications technology, environmental pressures relating to waste management and energy efficiency, all have profound implications for forward planning, new ways of organising work and new skills. The Rethinking Construction initiative asked whether construction had the right skills to cope with these changes, and their view was that there were significant gaps.

Significant skill shortages are currently being experienced across the UK – the most difficult areas are carpenters & joiners, bricklayers, plasterers, roofers and plant mechanics. At present, the proportion of the construction workforce that are women (9%) or from ethnic minorities (2.4%) is very much less than in most industries, and significantly lower than their representation within the UK working population (45% and 6.3% respectively).

The image of the industry is often one of low pay and poor working conditions, and this will have to be improved and the pool of people from which the industry recruits expanded if the industry is to secure sufficient people over the next ten years.

Another concern with respect to recruitment is the 45% decline in the number of applications for places on engineering and construction-related courses in higher education in Great Britain (Northern Ireland interestingly has seen a 22% increase). Action must be taken to encourage suitable candidates to apply for construction-related FE and HE courses, to support the continuation and development of courses and to ensure graduates from such courses are recruited to, and retained within, industry employment.

Formal qualification is especially important in an industry that has such a large transient and mobile workforce, and where traditionally there have been a lack of barriers to entry and thus variable standards of work and a some times poor reputation. This has been most marked in the repair and maintenance sector, which makes up 47% of all construction activity. Stimulated by the need to tackle the highly unacceptable health and safety record, major players in the construction industry, in collaboration with the client base, have taken the bold step of committing to a fully registered and qualified workforce. As part of this campaign, special attention will need to be paid to supporting those with poor basic literacy and numeracy skills.

The traditional pattern of training for construction craft and tradespeople has been one where an individual is expected to acquire the bulk of their skills at the beginning of their careers – typically through an apprenticeship after leaving school. More attention needs to be paid to continuing development for those in construction trades as well as managerial and professional roles. This again was highlighted as a barrier to industry progress in the Rethinking Construction report.

The UK construction industry therefore faces a number of key challenges, which should form the basis of its strategies for skills development. The following list sets out the main areas that have been drawn from the preceding analysis, and which are addressed by the ConstructionSkills Business Proposition:

- Reducing current skills shortages in craft, management and technical occupations.
- Creating a fully qualified workforce.
- Improving business management, especially for small and medium-sized enterprises that rely on technical skill.
- Supporting the supply chain through moving to large consortia, long-term partnering and facilities management.
- Keeping up with technological change (prefabrication, manufacturing) and customer preference.
- Demand management – forward planning to help smooth out peaks and troughs in activity.
- Meeting the sustainability/environmental agenda.
- Planning for demographic change amongst customers and the workforce.
- Increasing productivity and competitiveness.
- Improving generic/transferable skills.
- Improving the image of the industry.
- Looking beyond traditional labour markets – increasing diversity.
- Improving health and safety.
- Managing the international flow of labour.

3.2 Gaps in current analysis and areas for future research

In order to support the work of ConstructionSkills in addressing the above, further analysis and research is required in the following:

- Research to provide more comprehensive data on professional practices and on geographical regions, especially Scotland, Wales and Northern Ireland.
- Analysis of the drivers of industry performance and the impact of skills.
- Analysis of investment in skill development – including public contribution.
- Analysis of basic skill needs and provision.
- Research to gain a better understanding of patterns of labour mobility in the industry.
- Research to provide better data on training supply and destinations of trainees.

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