Skills Needs Analysis for construction
Executive Summary

constructionskills

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The purpose of the Skills Needs Analysis is to provide the evidence base to demonstrate what the industry skill needs are and whether or not they are being satisfactorily met by current education and training provision, learning and qualifications frameworks and funding models across the UK.

This is a summary of the main findings. Greater detail, including data for the English regions, Scotland, Northern Ireland and Wales, can be found in the full report.

THE CONSTRUCTION INDUSTRY

ConstructionSkills covers a wide range of sectors in the development and maintenance of the built environment. It represents about 8% of the national economy in terms of GDP (Fig 1).

In the UK as a whole, the sector employs 2.1 million people, has 196,000 enterprises, generates £143bn of turnover (GDP) and over £50bn of value added. Excluding electrical wiring and fitting and plumbing (SIC 45.33) just over 1.8 million people work in the construction contracting sector (SIC 45). A further 225,000 are employed in professional consultancies (SIC 74.2). The industry is the second highest in terms of the proportion of its workforce composed of SMEs and self-employment (80%).

The construction process is a complex one starting with design and planning through production to ongoing maintenance and refurbishment. Construction work is almost entirely done on a project by project basis, whereby contractors will draw together teams of people who often work for quite a short period of time and then move on to another location or disperse. Much of the work is managed by a main contractor who deals with the client but who subcontracts part of it to smaller firms who specialise in a particular aspect of the process.

The level of fragmentation in the construction sector can be seen as both a strength and a weakness: on the positive side, it is likely that it has the flexibility to deal with the highly variable workloads linked to changes in economic cycles; on the negative side the extensive use of sub-contracting has brought contractual relationships to the fore and hindered team-working, supply chain integration and strategic management.

Analysis undertaken for DTI demonstrates that the UK construction sector, in productivity terms, is far nearer the performance of the US, France and Germany than other areas of the UK economy. In labour productivity the UK is within 15% of the performance of the best (USA) and in total factor productivity it is comparable with the three economies stated in the study.

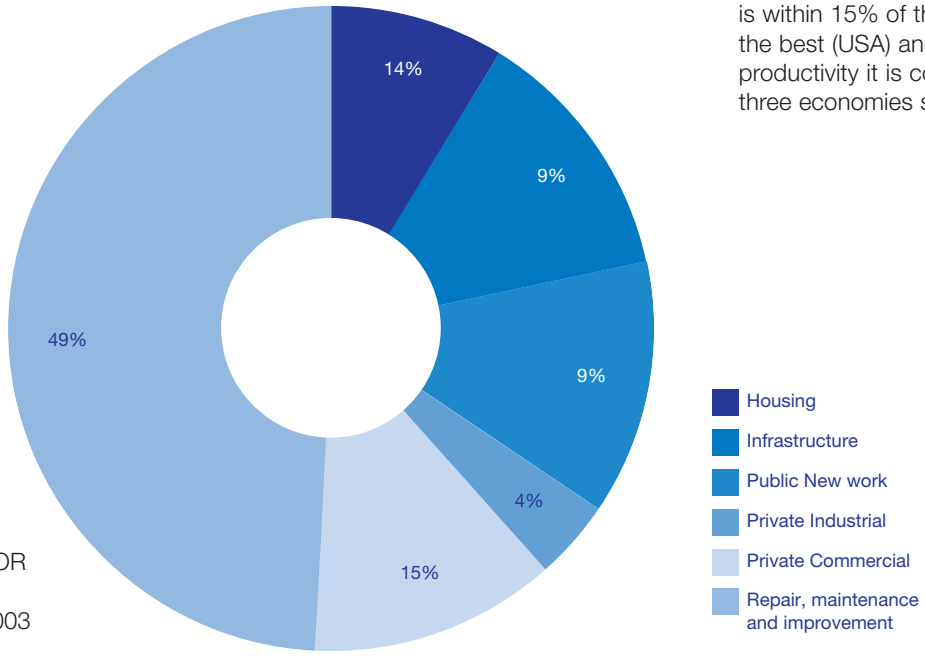

FIG. 1
CONSTRUCTION OUTPUT BY SECTOR IN 2000 PRICES, GREAT BRITAIN: 2003

CURRENT SKILLS PROFILE

The industry has seen sustained growth over the last 10 years, both output and total employment have increased by 30% over that period. Initially the industry had considerable excess capacity, with over 50% of companies reporting that lack of demand was restricting output in the mid 90s, but lack of demand has halved to around 20% and is now almost balanced by those citing labour shortages as restricting output (Fig 2).

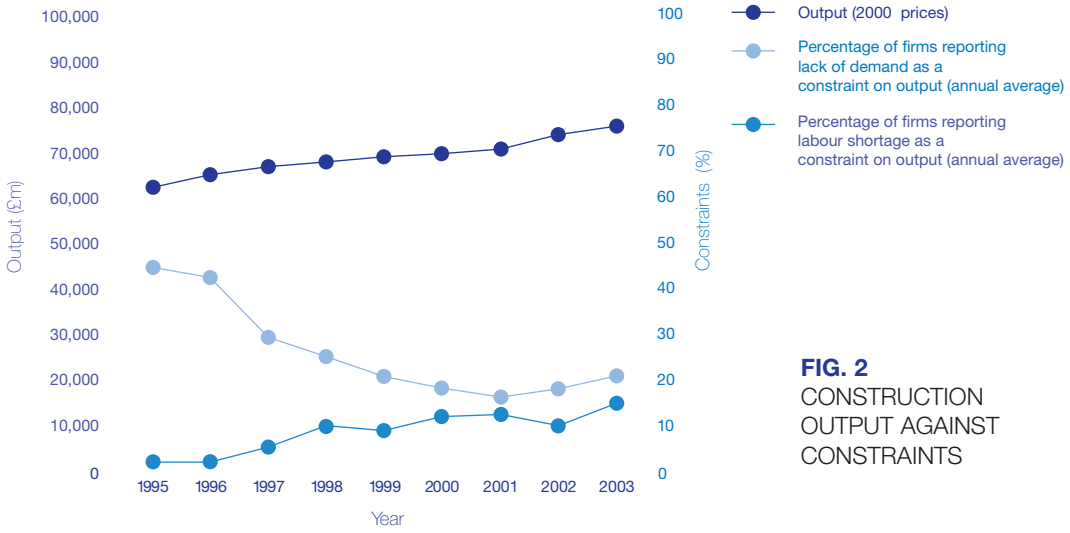

FIG. 2
CONSTRUCTION OUTPUT AGAINST CONSTRAINTS

Although the situation on skills shortages has improved, all sectors, particularly professional services firms, are concerned that there are insufficient graduates with the appropriate knowledge, skills and understanding entering the industry. Through the recent CIC surveys professional services firms have also voiced a more general concern at the skills gaps of their existing workforce.The industry appears to face strong demand over the next five to ten years, with prospects underpinned by Government aspirations for health, education, housing, transport and other infrastructure. This has translated into sustained growth albeit with variations across subsectors; substantial increases in output for public and private housing and public work being balanced by decreases in infrastructure and commercial work.

In addition to the quite distinct sectoral outputs there are also considerable differences in the contribution of each country and region to construction output within the UK, ranging from 15% in London and the South East to 3% in Northern Ireland.

The current skills profile can be split down by occupational share, age and qualification.

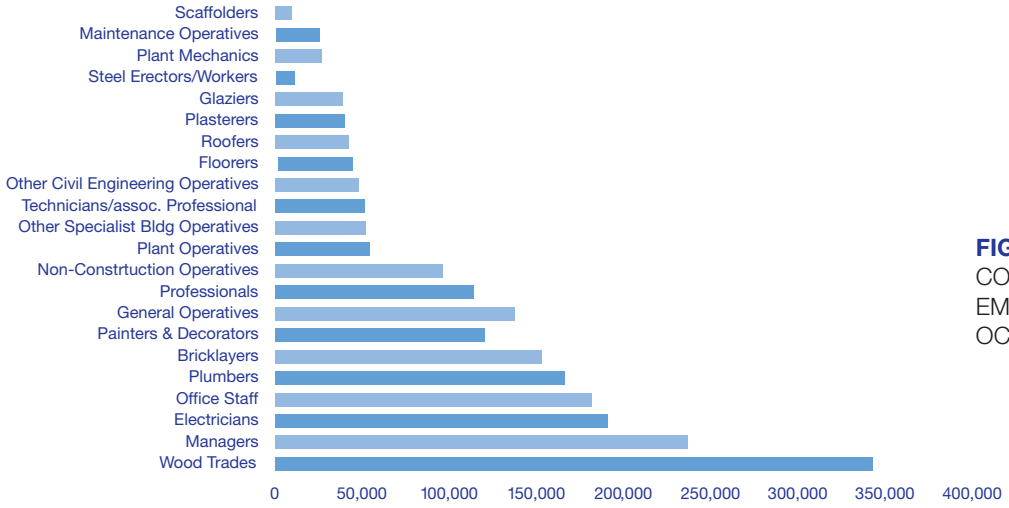

FIG. 3
CONSTRUCTION EMPLOYMENT BY OCCUPATION UK: 2003

FIG. 4
AGE PROFILE OF THE INDUSTRY BY MAJOR OCCUPATIONAL CLASSIFICATIONS

	England	Wales	Scotland	Northern Ireland	UK Total
S/NVQ Level 4 & above	13%	15%	14%	9%	13%
S/NVQ Level 3	21%	19%	27%	10%	21%
S/NVQ Level 2	11%	12%	7%	14%	11%
Below S/NVQ Level 2	15%	13%	7%	3%	13%
Trade Apprenticeships	20%	17%	31%	45%	21%
Other qualifications	9%	10%	5%	1%	8%
No qualifications	13%	14%	8%	17%	12%

FIG. 5
CONSTRUCTION INDUSTRY AND TOTAL UK WORKFORCE QUALIFICATIONS 2003

Typically, major contractors and house builders manage projects and do not employ craftspeople or workers in specialist trades. These skills are provided by sub-contractors, usually on short-term contracts. With extensive sub-contracting the industry is the second highest in terms of the proportion of its workforce composed of SMEs and self-employment (over 80%). Overall, estimates are that 37% of the industry's workforce is self-employed. The self-employment is at all levels and is just as prevalent amongst professional consultancy practices as it is for trade occupations. However self-employment is particularly high in the main craft trades where it averages over 60% of the workforce. A major piece of research has been commissioned to better understand this significant group and the findings should be available in the first quarter of 2005.

With this fragmented and short-term, project-based structure, the majority of site workers have entered the industry through informal routes and temporary work opportunities. Even today, with a tight labour market, formal job vacancies account for only 3% of employment, equivalent to only 2% of the workforce. Informal entry routes have tended to rely on learning on the job and have neither required nor generated formal qualifications. As a result the industry has a low proportion of its workforce qualified.

Currently women account for approximately 9% of the total employment in the industry, but only 1% of manual employment and 30% of non-manual employment. This makes the manual portion of the sector amongst the most gender imbalanced in the UK economy.

The proportion of ethnic minorities in construction employment has nearly doubled from a low of 1.5% in 1994 to 2.8% in spring 2004. However, this is still significantly lower than the 6.9% present in the total working population.

For both of these groups the representation at professional level is higher than that for manual workers but is still an under-representation compared with the workforce as a whole.

A major mobility study piloted in partnership with SEEDA and ECITB in London and the South East produced findings which, if proven to be representative of the industry in other regions, would provide evidence to support the widely held assumption that the construction workforce is indeed very mobile and to that end flexible.

Whilst there is much anecdotal evidence of the increasing use of migrant workers in particular areas of the UK there is a general paucity of data in official statistics. What data is there only represents legal migrant workers and the issue of illegal migrant workers is an even more complex one. A quick survey undertaken in 2004 by the Construction Confederation across some 300 construction sites across the UK suggested that '1 in 10 builders are migrants'. Clearly this is an urgent issue requiring further understanding and work is already underway to tackle it.

DRIVERS OF CHANGE

A number of factors are driving the future size and skill mix of the industry. The five most significant drivers based on evidence from employer surveys, econometric models and expert witness are:

- **The economy** – This is the prime driver for change and across the industry is the most significant by far. Continuing demand for good quality housing, hospitals, schools, commercial premises, roads and infrastructure has characterised the last four years and is set to grow in the next six. Over the next decade, the industry, like the economy as a whole, is likely to experience less volatility than in previous decades. Looking forward the predictions of a stable economy with steady growth will allow construction companies to plan workforce recruitment and development with far more certainty.

- **Pressure to improve performance by changing the structure and modus operandi of the industry.** Numerous studies of the industry have identified the reasons for late delivery, overspending projects and poor quality leading to demand from clients of all sizes to improve its quality, predictability and reliability and from shareholders (institutional or owner managers) to improve returns. Major drives to deal with the problem by changing the way the industry operates have been successful in a limited band of best practice companies but there is still much to do to achieve a broader and sustainable impact. This has had, and will have, implications for managers in the supply chain who will have to adapt their skills set to deal with greater risk, wider involvement in the whole construction cycle and a partnering culture.

- **Innovation and new technology** – Whilst slow to adopt technology the industry has a number of new approaches available to it that are being driven into the industry by suppliers and welcomed by clients. Some of these are micro-innovations that impact on individual occupational skills. Macro-innovations in the whole process, such as the offsite manufacture of buildings, require new skills of design, assembly and project management. Currently the structure of the industry acts as a barrier to innovation which impedes and slows change.

- **Sustainability** – The impact of the Government's new UK Sustainable Development Strategy, the Sustainable Communities Plan, the Egan report on Skills for Sustainable Communities, the new Sustainable Buildings Code and the Secure and Sustainable Buildings Bill will all need to be factored into how we support future industry skills development. This policy drive of the Government for sustainable development is slowly taking hold in the minds of the consumer, requirements of clients and the practices of some of the larger industry players. When fully embraced sustainable construction will impact on the way that the industry builds and what it builds. As with innovation there are structural barriers to change however sustainability is enforced by legislation and so the industry will be forced to act.

- **Legislation** – Government policy around quality of work (working time directive, parental rights, minimum wage, health and safety) and reducing damage to the environment (planning legislation, aggregate tax) raises operating costs and changes the way the industry works.

Whilst these drivers act on the majority of construction companies in the same way, there are exceptions where one driver may have greater impact than the others. Examples of this are:

- In some areas of the housing market (notably that of social housing) the adoption of offsite manufacture is serving to move jobs from site to the factory thus innovation is a stronger factor.

- Specialist commercial building sectors are heavily influenced by new technologies particularly energy management and communications systems.

- The large public sector projects are more influenced by government policy on sustainability and changes in procurement practices e.g. Private Finance Initiative or Strategic Partnering.

MOVING FORWARD – FUTURE SKILLS NEEDS

These five main drivers will obviously have an impact on the size and skill mix of the construction industry over the next five years. The degree of change is to some extent in the hands of clients particularly the Government as a major client. Whilst the industry can drive through changes in terms of quality, time and cost it currently has little control over economic cycles, management of the market and client demand.

The future skills mix can be viewed under three headings:

- Size and occupational share based on the most likely scenario
- Requirement for qualified new entrants
- Skills gaps associated with improved performance and productivity and innovation allied to new work practices, processes, materials and technologies

Size and occupational share

The current forecast is that the industry needs to recruit and train 88,000 entrants per annum for the next five years with 25,000 in the four main trades, 20,000 specialists and civil engineering occupations, 7,000 in professional and technical roles and 14,000 in electrical, plumbing and related trades.

FIG. 6
THE HEADLINE FIGURES FOR GROWTH

Scenario	Overall increase in total size of workforce, Great Britain 2004-2008
Most likely Growth = 2.3% per year	From 2,038,620 at the end of 2004 to 2,142,930 at the end of 2008. A net increase of 104,310.
Low growth Growth = 1.3% per year	From 2,014,660 at the end of 2004 to 1,977,440 at the end of 2008. A net decrease of 37,220.
High growth Growth = 3.3% per year	From 2,062,620 at the end of 2004 to 2,319,370 at the end of 2008. A net increase of 256,750.

FIG. 7
CONSTRUCTION EMPLOYMENT AND TRAINING REQUIREMENT BY OCCUPATION, BASED ON 2.3% GROWTH, UK: 2004

Occupation	Total Employment	Average Annual Requirement
Management & Clerical	415,000	17,000
Technical & Professional	175,000	7,000
Main Trades	615,000	25,000
Specialists	217,000	9,000
Plant & Logistics	135,000	5,000
Civil Engineering	261,000	11,000
Plumbing & Electrical	348,000	14,000
Total	**2,166,000**	**88,000**

Skill mix and skills gaps

The evidence from work undertaken as part of the Skills Needs Analysis is that employer skills requirements are in many cases structured by their existing business strategies; this approach will equip the sector with the workforce for today but does not address the future. Some skills gaps may not be recognised as such until the organisation tries to improve its position in terms of growth or market position.

One possible risk is that the industry adopts a low skills equilibrium: the industry does not embrace the innovations in working practices, technologies and materials available and so requires no new skills; its lack of new skills in turn prevents it from adopting these innovations.

In particular,

- Research with best practice construction has revealed that whilst their managers have good technical and legal skills, they are weaker in the soft skills needed for successful partnering.
- There is a lack of understanding of the impact of the Government's wide-ranging sustainability agenda on what and how the industry builds.
- Amongst professional services firms there is evidence of a growing concern as to the skills of both their existing staff and new recruits. These centre particularly on the technical skills associated with design and the management of projects.

In summary, the evidence is that there is no case for believing that there is going to be a radical switch in either the size or skill mix of the workforce over the next five years but that work does need to be done to provide the skills mix that will exploit the innovations as they become available. However the future projections for the industry need to be kept under constant review. Work is underway to set up an industry wide Skills and Productivity Observatory to monitor and advise on the impact of future trends.

MEETING THE CHALLENGE – REVIEW OF PROVISION

The key question is – to what extent are the current education and training provision, learning and qualifications frameworks and funding models across the UK in a position to meet the current and future skills needs of the sector? Taking these in turn:

Education and training provision

The provision is that supplied by schools, further and higher education colleges, private training providers and the industry itself. The provision can be segmented into two main streams – initial skills formation and continuing development.

While the full report looks at each of these in more detail the key messages that emerge are:

- The programme of activities aimed at school students has been very successful in increasing the numbers of white males applying for craft courses at FE colleges. There is still a need to address the number of applications from women and ethnic minorities and also those applying for construction related courses in higher education
- Significant numbers of young people in England and Wales are unable to become qualified as there is a lack of placements available for them to obtain the necessary work based experience
- For this and other reasons the completion rate for apprenticeships in England and Wales is unacceptably low
- There is a need to increase the amount of site-based provision
- Concern from professional services firms that there are insufficient graduates coming into the construction marketplace with the right mix of knowledge, skills and understanding
- Due to its relatively high cost there is a lack of publicly funded specialist provision. This applies particularly to plant occupations
- There are good examples of manufacturer training being adopted to support the training of new entrants
- Aside from the Qualifying the Workforce initiative there is currently not much evidence of any substantive planned investment in training by construction companies and professional services firms
- The mobility of the workforce is proving to be a barrier to learning due to lack of accessible knowledge as to availability of relevant provision across the UK

Learning and Qualifications Frameworks

Consultation with employers, unions and providers have indicated that:

- The current apprenticeship framework is not perceived as meeting needs of either the industry or the individual
- Current structure of N/SVQs is seen to be too inflexible – there is a great deal of support for a more unitised approach
- Assessment regimes need to be more flexible and user friendly without losing the necessary rigour
- There is a lack of a clear, flexible education-career ladder from school based programmes through initial skills formation at FE and HE level to ongoing continuous professional development – to support lifelong learning in construction

Funding models

The main message to emerge from the research was the sheer complexity of the funding regimes available to support education and training. The overwhelming need is to rationalise and package a clear and sensible employer offer. More specifically:

- To achieve “employability” at vocational level 2 sufficient Government funding should be made available across the UK for on-site assessment and training
- There needs to be flexibility in the funding models used to support the achievement of apprenticeship frameworks including for adults where, to encourage diversity, funding for adults needs to be at the same rate as for 16-18 year olds
- Allowance should be made for the higher unit costs for specialist provision
- Funding for Higher Education should support the full range of construction industry requirements with particular reference to the large number of part-time students on construction-related courses

RESEARCH METHODOLOGY

The work underpinning this summary was developed building on a well-respected research programme and work with the industry over a long period. We undertook a major exercise to bring together all relevant sector intelligence and forecasting to provide a rationale for adopting agreed priorities for action and a basis for bringing about change in the way the industry goes about developing its workforce.

The exercise had three major strands:

- To bring together all the research undertaken by the three partners along with an extensive body of sector intelligence work carried out by other industry bodies and in partnership with other stakeholders. This includes a number of significant national and regional reports that have already led to jointly developed and agreed skills action plans for construction.
- To commission research on specific topics where we needed to either validate less robust data or begin to fill gaps in our knowledge base. Both of these programmes are ongoing and include assessor capacity and capability, the link between skills and productivity, total investment in training, training and the self-employed.
- To review the ConstructionSkills current research programme in the light of the demands that have been put on it by the SSA process and draw up a plan to improve it in the short to medium term. This has included an in-depth and independent review of the CITB-ConstructionSkills Employment Forecasting model overseen by a reference group of industry experts. The outcome has been very rewarding with the setting up of an industry wide Skills and Productivity Observatory to co-ordinate, validate and agree the sector intelligence for the construction sector built around an enhanced econometric model.

This has been a summary of the main findings of this exercise. Greater detail can be found in the full report available from **www.constructionskills.net** from 2005

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CITB-ConstructionSkills, CIC & CITB(NI) are working in partnership as the Sector Skills Council for Construction