

Skills Needs of Specialists in Construction

Final Report

June 2013





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Executive Summary

Context and Approach

Existing Labour Market Intelligence (LMI) for the UK construction sector does not provide the level of information required to enable detailed insights into segments of the construction industry commonly known as specialists. This covers hundreds of sectors and occupations, but information in important areas, such as, sector composition, workforce characteristics, skills levels, gaps and needs and training undertaken is missing.

In response to this issue, CITB has undertaken this ground-breaking research as a pilot study with 17 specialist sectors to capture Labour Market Information through qualitative and quantitative interviews. From this, it is proposed to develop a template for, as required, future research with the remaining specialist sectors.

This pilot research was undertaken with the following 17 sectors:

Building and Remedial Treatments	Resin Flooring
Concrete	Road Working Operations
Civil Engineering	Roofing
Demolition	Shopfitting
Drilling and Sawing	Stonemasonry
Fitted Interiors	Timber Frame Erection
Land Drilling	Tunnelling
Passive Fire Protection	Woodworking
Render and Cladding	

The research was completed in three stages:

1. In-depth discussions with Trade Associations and Federations in the 17 sectors to provide an overarching viewpoint of each sectors' economic performance, predictions for future growth and any issues experienced relating to skills and training.
2. Telephone survey of 1,003 specialist construction employers to examine their workforce and business characteristics, current skills levels, gaps and needs, recruitment of new employees and approaches to training existing staff.
3. In-depth interviews with training providers in each sector to provide insights into the training currently available and undertaken in the sectors, any issues faced when providing new courses and possible training gaps, which may need to be filled in the future.



Key Findings

The key findings below relate overall to specialist construction, but are based upon the findings from the 17 sectors within this study taken together as a single entity. Specific findings for each of the 17 individual sectors are interspersed throughout the main body of the report and within Section 7 Key Findings and Recommendations.

Businesses

- Estimated 83,244 companies in the overall specialist sectors in this study, with an estimated 466,754 specialist employees and 620,000 employees in the sectors as a whole undertaking non-specialist roles
- 75% of businesses have been established for more than 11 years, 89% trading for more than 6 years and only 3% founded since 2010
- Trade Associations and Federations and employers see survival as the key challenge for businesses now and in the future (2019 and beyond)
- Levels of growth upwards of 1% to 2% are not expected in most specialist sectors until 2014-2019 onwards, with the exceptions of render and cladding and tunnelling
- Approximately 69% of employers are aware of the low carbon agenda and initiatives such as the Green Deal.

Workforce Characteristics

- Specialist employees in this survey sample are slightly younger, and there is a slightly higher proportion of females and individuals from non-white ethnic backgrounds compared to the wider construction industry
- Very few vacancies within the surveyed specialist companies (average of less than 1 per business) and just over half of these are for specialist operatives
- 14% of vacancies are hard-to-fill and not filled mainly due to the quality of applicants and their lack of specialist skills, knowledge, relevant qualifications or attitude and motivation
- The most popular method of recruiting new employees is word of mouth
- Almost two-thirds of employers (60.6%) recruit specialist employees from within the construction industry, 33.3% recruited from school, college or University and only 6.1% recruited from non-construction sectors.

Skills

- More than one in four employers (27%) report having skills deficiencies and 11% report having skills gaps or shortages
- All key skills areas in the survey are in need of some future development, with the employers' key priority being to develop understanding of new legislation which impacts on their business
- Some sectors record below average ratings for skills which employers classify as amongst the most important for their business, such as, practical skills in render and cladding, woodworking technical knowledge and IT skills and communication skills in demolition and tunnelling
- Employers' rate their specialist employees' practical specialist skills and technical knowledge more highly than their generic skills, with the exception of management, customer service and team-working.



Training

- Main training issues identified in the report relate to Apprenticeships, ensuring there is a fully qualified workforce, supply of training and cost in delivering specialist training provision
- Trade Associations/Federations and training providers believe that, in general, existing training provision meets the skills needs of employers, but specific gaps may still exist
- Approximately 43% of training providers interviewed are Trade Associations/Federations
- Employers in building and remedial treatments, passive fire protection and render and cladding suggest they are experiencing negative impacts of skills gaps as a result of a lack of convenient or suitable specialist training courses
- Employers' decisions to train are mainly influenced by the extent to which training will help business needs, fill existing skills gaps, improve employees' skills and knowledge and meet regulatory or legislative requirements
- Employers favour shorter forms of in-company training, whether for very high or very low numbers of staff
- Employers identified the following as the most important aspects for them to develop in future:
 - Health and safety training
 - Keeping up-to-date with new legislation/regulations
 - Providing relevant NVQs
 - Developing practical sector specific skills
 - Developing IT skills
 - Developing sector specific technical knowledge
 - Developing management skills
 - Providing/obtaining CSCS cards.

Recommendations

The research assists three key audiences:

1. CITB can use this intelligence to inform its future planning and strategies, particularly those relating to training for the specialist sector.
2. Specialist employers can gain a sense of ownership for these strategies, as well as evidence of CITB's commitment to improving skills and training in the specialist sector.
3. Specialist Trade Associations and Federations can also use the research as a tool to develop their own future strategies, including collaborative work with CITB.



The key over-arching recommendations are:

1. Share results of the research with Trade Associations and Federations and employers

CITB to publish and share the research report with specialist Trade Associations and Federations and employers to ensure they are aware of the findings and can engage with CITB to address the issues and challenges. This will include partnership working with Trade Associations and Federations regarding collaborative working to respond to specific sector issues identified in the research. For example, increasing awareness of low carbon and green initiatives among employers where this is appropriate or the need to develop and encourage up-take of new and appropriate specialist training provision.

CITB to also consider replicating the research with some, or all, of the other specialist sectors not included in this study to establish a more complete evidence base to inform the refinement of an overarching training and skills and business development strategy.

2. Assess how far existing training provision meets identified skills deficiencies and gaps

The research has identified the vast majority of employers as having no skills deficiencies or gaps. However, where some employers have identified deficiencies or gaps, it is not wholly clear whether existing training provision fully meets these needs.

Training providers interviewed claim their provision does cover all these deficiencies, but the relatively small provider sample interviewed does not cover the entire provider population and specific gaps may, therefore, still exist. Employers in the building and remedial treatments, passive fire protection and render and cladding sectors have suggested they are experiencing negative impacts of skills gaps as a result of a lack of convenient or suitable specialist training courses. It is possible these and other employers do not have local or conveniently accessible availability of the training provision, which meets identified skills deficiencies and gaps.

Further investigation is recommended to review and inform the development of future specialist training provision.

3. Consider developing any new training provision as short duration courses

Specialist sector employers identified a clear preference for short duration training, particularly if this can be delivered internally in the workplace. CITB with the specialist Associations and Federations should assess the need for new training provision in specific



areas and use the Specialist Up-skilling Programmes model introduced at the request of the specialist sectors in 2011-2012 and other ways to address this issue. The feasibility and required support for in-company training within a suite of training for the specialists leading to a recognised vocational qualification needs to be investigated to meet the employer's preferences.

Priority Actions

- CITB and the Trade Associations /Federations within the 17 sectors in this study should agree a strategic approach to address the key issues within this report and develop an integrated action plan
- CITB and Trade Associations/Federations need to review advice and support provided to new businesses in their first two years of existence and micro-businesses, specifically pin-pointing how to respond to skills gaps and reduce any negative impacts these may create
- The most important training and development areas identified by the employers for them to develop (Key Findings, Page 6) need to be addressed by collaboration between CITB and the specialist Trade Associations/Federations and training providers
- CITB and Trade Association/Federations seek to work together to improve Careers Information Advice and Guidance on the specialist occupations and career progression opportunities
- The CITB National Specialist Team and Research Department will review specialist training provision available across the UK in each sector and specifically how far this meets the skills deficiencies, gaps and training needs identified by employers
- Trade Associations/Federations and CITB to work in partnership to increase recruitment of under-represented groups in the specialist sector, in particular women and non-white ethnic backgrounds
- Trade Associations and Federations in relevant sectors and CITB to establish, further methods of raising awareness of the opportunities presented by the low carbon agenda and the requirements for employers to access these.



1. Introduction

A wealth of labour market intelligence (LMI) exists for the UK construction sector. Construction has long since featured prominently in key LMI publications such as the former Learning and Skills Council's *National Employer Skills Surveys* (NESS) and its successor volumes the UKCES's *UK Employer Skills Survey*¹.

The annual Construction Skills Network (CSN) *Construction Forecast*² reports also provide national and regional forecasts and analysis of employment and output by occupation. The CSN reports include a number of occupations which are within specialist sectors, for example, wood occupations and interior fit-out. However, for the specialist sector this is not specific enough, as fitted interiors and wood trades such as woodworking and timber frame erection are very different occupations and require differing specialist skills.

In large-scale, national surveys such as CSN, it is impossible to achieve the granularity required to reveal precise information regarding the composition of the construction industry and, specifically, of its many sectors and unique occupations. A broad approach to examining construction as a single sector is valuable for high level strategy and overview, but representing the views of specific groups operating within the industry requires more highly focused LMI produced at the sectoral and detailed occupational levels.

The LMI reports by CITB are perhaps closest to resolving the overall problem by researching and analysing on a sectoral basis. Nevertheless, a disconnection still exists between nationally-gathered statistics and the type of detailed information needed on specialist construction activity. Especially, as its complex composition presents great difficulties when attempting to quantify workforce numbers across specific specialist sectors, before determining skills and training needs.

Around 48% of the total number of companies on the CITB Levy Register is from the specialist sectors when defined by overall business type (defining "specialist activities" presents a separate set of problems which are examined in more detail in Section 2). The diverse nature of the specialist sector is further illustrated by the coverage provided by CITB's *National Specialist Team* (NST) which works closely with over one-hundred separate Trade Associations and Federations covering a very wide range of unique occupations³.

CITB is therefore, addressing the issue of insufficient granular data and sector intelligence through this research to provide robust statistical information on a number of specialist construction sectors at a more precise occupational level than is currently available.

This ground-breaking research project is the first of its kind for specialist construction. The 17 sectors examined were chosen for their diversity, and as the research is a pilot study, this could be repeated in future and include more or all of the other 60 plus specialist

¹ National Employer Skills Survey, undertaken biannually between 1999 and 2009 by the former Learning and Skills Council (national)

² Construction Skills Network, Blueprint for Construction 2013-2017, Experian-CITB (2013)

³ Invitation to Tender, Specialist Skills Needs Research Project, CITB, 2012



construction sectors.

The intelligence in this report was gathered through in-depth interviews with Trade Associations and Federations, training providers and from the results of a survey of 1,003 employers across the UK operating within the 17 selected specific specialist construction sectors in the UK.

2. Methodology

This section of the report briefly summarises the methodology used to produce this research, including details of the samples achieved and statistical analysis undertaken.

2.1 Aim of the Research

The aim of the work was to produce labour market information and intelligence relating to the pre-defined “specialist construction sector” by establishing the profile of the sector (i.e. its demographics and workforce characteristics) and investigating key issues such as skills levels, gaps and needs, recruitment, training and future growth. The overall objective was to provide a baseline to inform future specialist sector research, such as econometric modelling, and develop a strategy which will meet the skills needs of the specialist construction sector.

This was achieved by answering the following research questions:

- What is the current economic status of the 17 specialist sectors in this survey?
- How many specialist employees are employed in these sectors?
- What is the profile of the workforce in terms of age, gender and ethnicity?
- Which specialist sectors are most optimistic about future growth?
- What is the current skills situation within the specialist sectors?
- What skills gaps exist and what are the causes of these?
- Which skills and occupations predict future growth?
- Will future growth be slowed or constrained by skills shortages and gaps over the short, medium and long term?
- How many vacancies currently exist in the specialist sectors?
- How many of these vacancies are hard-to-fill?
- What is the reason for hard-to-fill vacancies?
- How much training is undertaken by specialist construction employers?
- What methods of training are most commonly used?
- What gaps exist in specialist training provision?

The approach was undertaken in four stages:

1. In-depth qualitative interviews with Trade Associations/Federations in each of the 17 specialist sectors in this pilot study.
2. A telephone survey of 1,003 employers operating within the 17 specialist sectors (quantitative and qualitative).



3. In-depth qualitative interviews with Training Providers operating within the 17 specialist sectors.
4. Analysis of the data gathered including a skills gap analysis.

Prior to conducting the fieldwork a number of key conceptual issues were identified and examined in close collaboration with CITB. These are summarised below.

2.1.1 Specialists included in this Pilot

The specialist sector comprises literally hundreds of occupations across a wide range of construction sectors. Due to the size and scope of this project it was not possible to include each and every specialist activity. The following 17 specialist sectors were selected:

- Building and Remedial Treatments (Damp Proofing and Timber Infestation)
- Concrete
- Civil Engineering
- Demolition
- Drilling and Sawing
- Fitted Interiors
- Land Drilling
- Passive Fire Protection
- Render and Cladding
- Resin Flooring
- Road Working Operations
- Roofing
- Shopfitting
- Stonemasonry
- Timber Frame Erection
- Tunnelling
- Woodworking.

2.1.2 Defining a Specialist Employee

To try to establish accurate LMI on the number of specialist employees, the following definition was used during the employer telephone interviews, to help employers differentiate when providing data for their specialist and non-specialist staff:

“Specialist” means employees in occupations which are unique to the specialist sector and not transferrable across the wider mainstream construction industry.

Employers were also only asked to provide information relating to their directly employed workforce staff and not those sub-contracted.

2.1.3 Sampling specialist employers

A sample of 1,000 employers was established to provide data at an acceptable level of reliability, within the scope of this pilot study. Within this sample, the aim was to provide a spread of responses by business size and from across the UK nations and English regions.



As the survey sought to produce comparable data from each of the 17 sectors using a single questionnaire (essentially 17 mini-surveys forming an overall survey when combined), the total 1,003 interview completions was split equally across the target sectors. Weighting was then applied in the final analysis.

The final sample frame agreed for the employer interviews is presented in Table 1, along with the number of completed interviews, estimated number of companies in each sector and an indication of the proportion of employers interviewed who are members of a Trade Association or Federation.

Table 1 Employer survey sample

Sector	Target	Achieved	Number of companies ⁴	% Trade Association/ Federation Members
Building & Remedial Treatments	60	60	100	25%
Concrete	50	50	3,000	24%
Civil Engineering	95	95	19,985	23%
Demolition	60	62	480	66%
Drilling & Sawing	45	46	1,500	70%
Fitted Interiors	60	61	5,341	93%
Land Drilling	45	45	100	93%
Passive fire protection	35	39	73	64%
Render and Cladding	55	55	648	51%
Resin flooring	60	60	2,000	93%
Road working operations	60	60	3,000	70%
Roofing	80	84	6,895	71%
Shop Fitting	50	51	160	73%
Stonemasonry	55	55	200	51%
Timber Framing Erection	70	71	3,700	25%
Tunnelling	30	19	62	79%
Woodworking	90	90	36,000	94%
TOTAL	1,000	1,003	83,244	

2.1.4 Response to the employer survey

As shown in Figure 1, approximately one fifth (20.9%) of the employers interviewed are based in the South East of England, while Wales, Scotland and Northern Ireland combined accounted for around the same proportion of the overall response (20.2%).

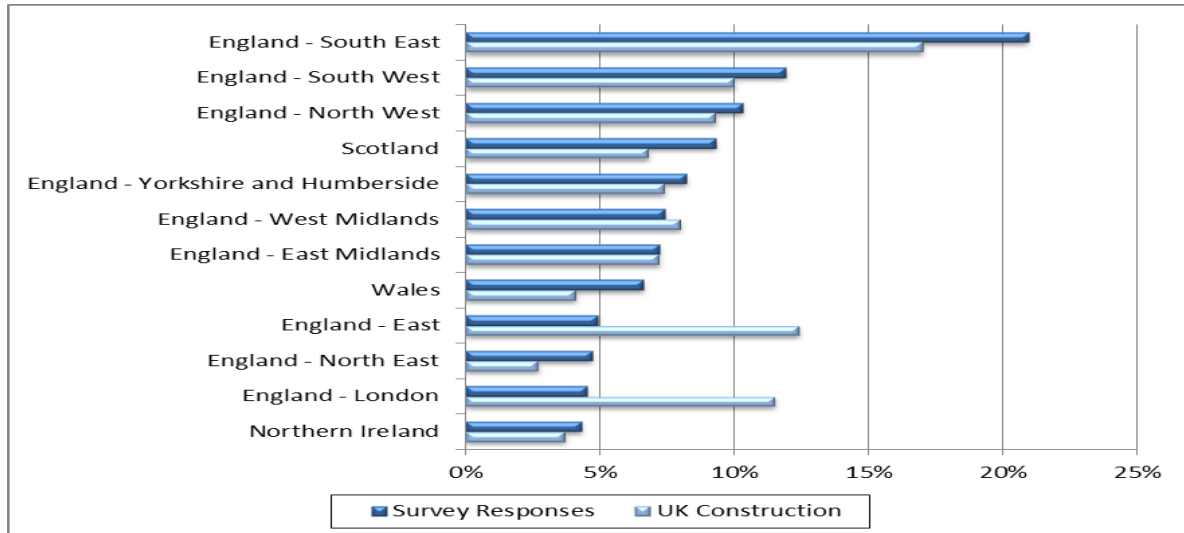
For comparison purposes the geographical spread of the overall construction industry and

⁴ The number of companies is estimated from a combination of ONS SIC (2007) based activity data and where this data was not available at a suitably detailed level Pye Tait national databases (sectors identified using keyword searches). ONS, UK Business: Activity, Size and Location, 2012 combined with Pye Tait national databases, 2013.



specialist sector is included in Figure 1 below⁵. The spread of specialist responses aligns closely to the composition of the overall construction industry. The latter is however for the entire industry, whereas the sample was drawn only from specialist companies, whose geographical spread is not recorded on a national basis and may be very different from general construction. It can be expected, for example, that highly specialist occupations, such as, tunnelling, land drilling and even civil engineering may be concentrated in certain urban centres.

Figure 1 Specialist employers' geographical location



Base = 1,003

2.2 Notes on Implementation

1. The relevant Trade Association in the land-drilling sector (British Drilling Association) was unable to take part in an in-depth telephone interview due to serious illness. Information presented in Appendix I for the land drilling sector is therefore, derived from in-depth internet based research. Numerous attempts were also made to interview the Trade Association representing the Northern Ireland demolition sector. An interview could not be scheduled within the time-scales of this research therefore an interview was conducted with the English based equivalent.
2. The tunnelling sector was under-represented in terms of employer survey completions, with 19 interviews completed out of an initial target of 30. The target was established as a broad figure related to the overall survey totals and a reasonable share of that total for all sectors. Subsequent research found that the tunnelling sector actually comprises around 62 companies meaning that 19 interviews represent 31% of the industry.

⁵ ONS UK Business: Activity, Size and Location Statistical Release, SIC (2007) codes 4110 to 4399



2.3 Notes on Statistics

1. The statistical rule 'Interquartile Range x 1.5' (from here on referred to as IQR*1.5) has been applied to the numerical data gathered to provide accurate statistical findings relating to the total and average number of employees employed in the specialist sector. The rule removes outliers from numerical responses which, if left in a dataset, may skew the responses. In the context of this research, outliers removed concern extremely large organisations whose results over estimate the overall averages for employee numbers.
2. Statistical results presented in Section 4 for the characteristics of age, gender and ethnicity must be interpreted independently of one another. Although employer interviews were conducted with senior-level stakeholders such as Directors and Human Resources Managers, in some instances these respondents were unable to provide precise figures on the breakdown of their workforce according to all of these variables. For example, a respondent may have been able to provide the exact number of staff they employ in each age category but were unable to provide the exact figures for the different ethnic groups.

Respondents who could only provide responses to one or two variables were not excluded from the overall calculations as data provided for any of these three variables adds value to this research.

While statistics have been calculated for each characteristic separately, the total number of employees by age, gender and ethnicity does not therefore, aggregate to the same overall figure.



3. The Specialist Sectors

This section of the report presents the findings from the in-depth telephone interviews undertaken with Trade Association and Federations. Additional details on the specialist activities undertaken in each sector, key challenges faced and current performance is included in Section 7.2.

Table 2 summarises the views of the Trade Associations and Federations in each specialist sector in terms of current market conditions, regional differences and predicted future growth. Land drilling has been omitted from the table as an interview was not conducted with the relevant Trade Association (as discussed in Section 2.2). The table is categorised using a traffic light system which can be interpreted as follows:

Green	Positive performance and future growth identified
Amber	Mixed performance identified -both new work and issues exist, limited future growth
Red	Negative performance identified – businesses fighting to stay afloat.



Table 2 Summary of Trade Association/Federation Findings on Prevailing Market Conditions

Sector	Current Market Conditions	Regional Differences	Growth
Building and remedial treatments	Mixed; fewer orders but enough work to survive	Most work in South East and London; far less in the North East, Midlands and Scotland	2012-2014 – 1%-2% 2015 onwards – 5% is required
Concrete	Much less work available, businesses' priority to stay afloat	Scotland worst hit in terms of orders	2012-2017 – none 2018 onwards – unknown
Civil Engineering	Companies of all sizes competing for work; negatively affecting smaller businesses; period of stabilisation predicted	South of England has most new work	2012-2017 – very little 2018 onwards – increasing as new projects begin (e.g. HS2)
Demolition	Price and time constraints on businesses across the UK	North-South divide with Southern companies enjoying more new work	2012-2014 – none 2015 onwards – increasing steadily
Drilling and sawing	Orders exist but provided on a short-term basis	Same across the UK	2012-2014 – very little 2014 onwards – increasing steadily
Fitted Interiors	Businesses fighting to remain profitable while moving from new build to refurbishment works	North East has least new work	2012-2017 – none 2018 onwards – increase by 2019 onwards
Passive Fire Protection	Reduction in public sector and new build construction has affected levels of work	London only region offering lucrative new work	2012 onwards – increase as Government funding for public sector new builds increases
Render and Cladding	Buoyant in a number of regions, Green Deal expected to improve this further	New contracts expected across the UK	2012 onwards – increase as opportunities from energy efficiency agenda are realised
Resin Flooring	New build orders slowed but refurbishment increased. Cash-flow problems exist	More new work in England and Wales than Scotland and Northern Ireland	2012 onwards – steady, improving when public sector new builds increase
Road Working Operations	Road safety marking – work exists but profit deteriorated	Scotland worst affected	2012 onwards – none until 2014
	Road surface treatment – new works increasing	England busiest, Wales and NI less so	2012 onwards – increasing from 2014
	Road planing – far less work available	Situation is serious across the UK	2012 onwards – none
Roofing	New work exists but market saturated with companies; cash-flow problems exist	South of England has most work, NI least	2012-2014 – slow and steady 2014 onwards – 4% and rising
Shopfitting	Increasing competition equals survival situation; cash-flow problems exist	Same across the UK	2012-2014 – none, unknown beyond 2014



Table 2 Continued

Sector	Current Market Conditions	Regional Differences	Growth
Stonemasonry	No discernible pattern, positive and negative performance	Same across the UK	2012-2014 – static, unknown
Timber Frame Erection	Fewer new orders and increasing competition	London/South East has most new work	2012 onwards – unknown, energy efficiency agenda presents potential opportunities
Tunnelling	Booming, large-scale works planned and being undertaken	Mostly located in London, some work in Northern and coastal areas	2012 onwards – significant growth
Woodworking	Patchy; reliant on new build house-building; retrofit causing increasing competition between large and small companies	South has most orders but picture is similar across UK	2012-2014 – very little if any 2014 onwards – 1%-2%



The overarching viewpoint emerging from the interviews is that the state of the specialist sector is currently mixed. New orders exist in specific sectors and geographical locations, but serious issues including cash-flow problems resulting from increasingly stringent contracting arrangements, a lack of public spending on infrastructure projects (i.e. schools and hospitals) and increasing competition within specialist sectors are a major concern for survival of businesses.

These findings correlate with Wave 12 of CITB's Employer Panel research, which found that the need to increase sales is higher in regions, such as, the Midlands and the North West than in the South West and East of England. It also found late and slow payments are becoming an increasingly important challenge for businesses year on year⁶.

The tunnelling and render and cladding sectors present by far the most positive outlook in terms of current market conditions and future growth. The former is benefitting from a range of new large-scale infrastructure projects, while the latter finds itself in an excellent position to take advantage of major Government initiatives relating to the energy efficiency agenda, for example the Green Deal.

The concrete and road planing sectors present the most negative outlooks, where the priority for specialists is to remain in business, as the amount of new work available has drastically reduced.

The remaining sectors are, on the whole, obtaining enough work to remain in business, however a range of issues continue to impact on their profitability and potential for future growth (see Section 7.2 for full details for each sector).

Trade Associations and Federations interviewed were extremely cautious when asked to provide future growth predictions, based on the uncertainty of their sectors at present and the multitude of economic and social factors, which could impact on potential growth, particularly in the medium to long-term. However, predictions were as follows:

Timeframe	Growth
Short term (2012-2014)	0%-1%
Medium term (2015-2019)	1%-2%
Long term (2020+)	2%-5%

In the immediate future, growth is predicted to be minimal if there is any at all, with a perception that the market will not improve until the long-term. At this point growth up to 5% p.a. may be possible however a number of other factors will influence the achievement of these predictions.

These results broadly correlate to findings from the Construction Skills Network's latest UK Blueprint for Construction Report, which notes that construction output is expected to grow by less than 1% a year in the years leading up to 2017⁷.

⁶ Wave 12 Employer Panel Research, CITB (2013)

⁷ Construction Skills Network, Blueprint for Construction 2013-2017, Experian-CITB (2013)



In-depth interviews were also conducted with two major Federations providing coverage of the entire specialist construction sector. Findings from both these interviews correlate to those undertaken with specialist Trade Associations and Federations in individual sectors. Similar themes identified include:

- Issues affecting the sector – spending cuts have seen a decrease in the number of new build projects; changes to contracting arrangements are resulting in cash-flow problems, especially for smaller businesses; margins are becoming increasingly squeezed as competition for smaller work increases
- Economic buoyancy does exist within the specialist arena, with tunnelling and external wall insulation two occupational areas experiencing an increase in output and growth
- Modest growth predictions exist for the short, medium and long term, but no growth is expected in the next two years, beyond that at least 5% per year is required, but it is difficult to see where this will come from.

The findings provided by Trade Associations and Federations are considered in more detail in Sections 4 and 7.



4. Demographics

4.1 Composition of the Specialist Sector and Sectors

4.1.1 Length of time in business and business size

To build a complete profile of the specialist sector, all employers interviewed were asked how long their business has been in operation, how many employees they currently employ and whether all employees of the business are specialist (in accordance with the definition in Section 2).

The sector is very well established; with 75.2% in operation for 11 plus years; 13.7% for 6-10 years; 7.9% set up in the last 3-5 years and very few (3.3%) founded since 2010.

Sectorally, the highest incidence of businesses set up in the last two years is in the render and cladding (10.9%) and timber frame erection (9.9%) sectors. This is perhaps unsurprising for the former, given the buoyancy in the market reported by a Trade Association and the key role external wall insulation has to play in Government driven, low-carbon initiatives such as the Green Deal.

Similar reasoning may apply to the timber frame erection sector, which reports almost three times the average proportion of businesses established between 2008 and 2010. As one Trade Association observed:

“Sustainability and energy efficiency drives are pushing more eco-friendly forms of construction and that is expected to help the sector”

At first glance it may also be considered surprising that only 5.3% of tunnelling organisations were established in the last two years, taking into account the extremely positive future economic forecast for the sector and the size of opportunities this represents. However, tunnelling is high-cost-of-entry; it requires very expensive equipment, deep expertise and highly skilled staff, therefore opportunities for new firms to enter the market may be more limited than in other construction sectors.



Table 3 Length of time businesses have been in operation

Sector	0-2 years	3-5 years	6-10 years	11+ years
Overall	3.3%	7.9%	13.7%	75.2%
Building and Remedial Treatments	5.0%	15.0%	13.3%	66.7%
Concrete	-	8.0%	20.0%	72.0%
Civil Engineering	-	4.2%	10.5%	85.3%
Demolition	1.6%	3.2%	17.7%	77.4%
Drilling and Sawing	2.2%	4.3%	13.0%	80.4%
Fitted Interiors	-	3.3%	14.8%	82.0%
Land Drilling	6.7%	-	17.8%	75.6%
Passive Fire Protection	5.1%	10.3%	23.1%	61.5%
Render and Cladding	10.9%	9.1%	14.5%	65.5%
Resin Flooring	-	13.3%	13.3%	73.3%
Road Working Operations	1.7%	6.7%	6.7%	85.0%
Roofing	2.4%	9.5%	11.9%	76.2%
Shopfitting	2.0%	3.9%	13.7%	80.4%
Stonemasonry	5.5%	12.7%	12.7%	69.1%
Timber Frame Erection	9.9%	22.5%	12.7%	54.9%
Tunnelling	5.3%	-	5.3%	89.5%
Woodworking	2.2%	2.2%	13.3%	82.2%

Base = 1,003

Over one-third of businesses employ only specialist employees (not transferrable across the wider construction industry) as shown in Table 4. The road working operations sector records the highest proportion of businesses employing only specialist employees (80.0%). This may be explained in part by information provided by the relevant Trade Association in the road planning segment of the sector, which suggests employment is seasonal with the vast majority of employees out on site undertaking specialist work during the busy periods.



Table 4 Percentages of specialist employees in companies in the survey

Sector	Yes	No
Overall	39.3%	60.7%
Building and Remedial Treatments	63.3%	36.7%
Concrete	58.0%	42.0%
Civil Engineering	46.3%	53.7%
Demolition	22.6%	77.4%
Drilling and Sawing	17.4%	82.6%
Fitted Interiors	9.8%	90.2%
Land Drilling	2.2%	97.8%
Passive Fire Protection	71.8%	28.2%
Render and Cladding	49.1%	50.9%
Resin Flooring	35.0%	65.0%
Road Working Operations	80.0%	20.0%
Roofing	32.1%	67.9%
Shopfitting	3.9%	96.1%
Stonemasonry	41.8%	58.2%
Timber Frame Erection	46.5%	53.5%
Tunnelling	26.3%	73.7%
Woodworking	44.4%	55.6%

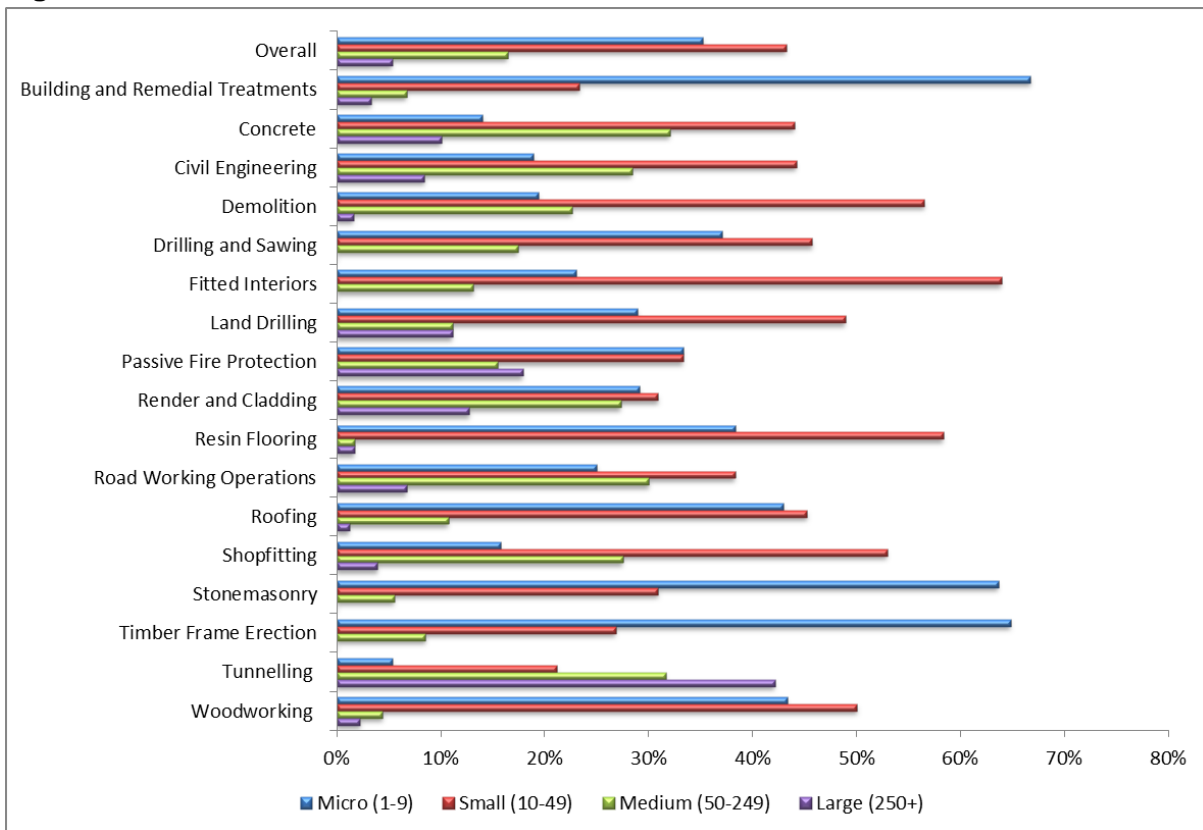
Base = 1,003

The size of businesses in the specialist sector is shown in Figure 2 and from this it can be seen that the overall majority of companies are small (10-49 employees) and micro (1-9 employees). The sector with the greatest proportion of large companies (over 250 employees) is tunnelling with 42.1% employing over 250 staff. This is some eight times higher than the average for the specialist sector and over twice as high as for passive fire protection, the most comparable of the other specialist sectors, illustrating the considerable size and scope of the tunnelling sector.

At the opposite end of the scale, the building and remedial treatments, stonemasonry and timber frame erection -sectors report almost twice the average proportion of micro (i.e. 1-9 employees) businesses (Figure 2).



Figure 2 Size of Businesses



Base = 1,003

To gather the most statistically accurate intelligence, employers were also asked to provide the exact number of employees they currently employ.

The latest CSN Forecast report⁸ estimates the construction industry currently employs some 2.47 million employees. Using this figure and ONS data for the number of enterprises in the construction industry (263,735) gives an average of 9.4 employees per construction business for the UK overall⁹. The overall average for the specialist sector (17.8 employees) shown in Table 5 is almost twice as high as the calculated average for the construction industry overall. This is probably due to the fact that the specialist construction sector includes a number of 'heavy' construction activities which, due to the size of works and resources required, are typically undertaken by larger businesses (e.g. civil engineering and tunnelling activities). The specialist sector also does not include the mass of generalist contractors in the industry.

⁸ Construction Skills Network, Blueprint for Construction 2013-2017, Experian-CITB (2013)

⁹ ONS, UK Business: Activity, Size and Location, (October 2012)



Table 5 Business and Estimated Specialist Sector Sizes by Number of Employees

Sector	Total employees in sample	Average per business	Total estimated employees ¹⁰	Total estimated specialist employees	Total estimated non-specialist employees
Overall	16,821	17.8	1,086,472	466,754	619,719
Building and Remedial Treatments	521	5.6	563	357	207
Concrete	1,235	22.7	68,246	39,583	28,663
Civil Engineering	1,980	16.8	335,748	155,451	180,297
Demolition	1,318	19.1	9,171	2,073	7,098
Drilling and Sawing	848	13.2	19,750	3,437	16,314
Fitted Interiors	1,248	16.4	87,354	8,561	78,793
Land Drilling	807	15.7	1,570	35	1,535
Passive Fire Protection	577	12.1	884	635	249
Render and Cladding	1,028	18.1	11,747	5,768	5,979
Resin Flooring	724	9.8	19,502	6,826	12,676
Road Working Operations	1,266	19.6	58,852	47,081	11,770
Roofing	1,452	14.1	97,549	31,313	66,236
Shopfitting	1,363	23.1	3,689	144	3,545
Stonemasonry	503	7.3	1,466	613	853
Timber Frame Erection	811	7.9	29,348	13,647	15,701
Tunnelling	202	16.8	1,042	274	768
Woodworking	938	9.4	339,991	150,956	189,035

Base = 880

Using data gathered for the average number of employees per business and estimates for the total number of companies in each sector (Table 1), it is possible to present estimated figures for the total number of employees in each specialist sector and for the sector overall, as shown in Table 5.

Estimates suggest that overall the 17 specialist sectors in scope to this research employ just under 1.1 million people. By distributing this total between the 17 sectors using the proportions of specialist and non-specialist staff currently employed (see Table 4), further estimates suggest just over 466,000 specialist employees currently work in the sector, with just under 620,000 employees undertaking non-specialist roles (Table 5)¹¹.

¹⁰ The total estimated number of employees is calculated by multiplying the average number of employees per business by the estimated total number of companies in each sector taken from Table 1. It is likely (without intention) that the survey included slightly larger than average businesses as it can be very difficult to identify and also obtain interviews with the self-employed and very small businesses. These estimates should be regarded as such and are likely to represent an upper limit for the true total number of employees in the overall specialist sector.

¹¹ As detailed in Section 2.1.2, the research differentiates between specialist and non-specialist staff by defining specialists as employees in occupations which are unique to the specialist sector and not transferrable across the wider mainstream construction industry. However,



Civil engineering is by far the largest, with building and remedial treatments the smallest employing just over 0.1% of the civil engineering workforce.

One possible explanation for these estimates is that the specialist sectors with the highest number of potential occupations within them employ the most staff. For example, civil engineering, woodworking and roofing have the three highest estimated total employment figures and arguably are three of the most diverse sectors, with a very wide range of specialist occupations within these. In contrast the smallest sectors such as building and remedial treatments, passive fire protection and stonemasonry may be considered more acutely specialist, with perhaps only a handful of occupations in each.

4.1.2 Workforce characteristics

A key requirement of the research was to identify the age profile of the specialist sector, in order to understand how far this would impact on future skills requirements. This was supplemented by questions which further considered the gender and ethnic profile of the workforce.

Age

Employers were asked exactly how many specialist and non-specialist employees they employ in age groups ranging from 16-24 to 65 and over. These were compared to proportions for the overall CITB sector footprint, based on the relevant SIC (2007) codes and the latest ONS Labour Market Statistics¹². ONS data does not include the age category '65 and over' therefore survey results for this category have been added to results from the '55-64' category to create a final age category of '55 and over.' When used for comparative purposes the CITB sector footprint is referred to as the overall construction industry for the remainder of this report.

Table 6 Percentages of employees by age band

	16-24	25-34	35-44	45-54	55 and over
Specialists per business	11.2%	24.5%	34.2%	18.8%	11.3%
Non-specialists per business	10.5%	23.2%	30.5%	24.5%	10.6%
Overall specialist sector	11.0%	24.2%	33.4%	20.1%	11.3%
Overall construction industry	9.6%	22.5%	25.0%	24.1%	18.9%

Base = 3,797 responses¹³

From this, the specialist sector appears to have a slightly younger workforce profile than the overall construction industry with 35.2% of the specialist sector aged 34 or under, compared

it is also important to note that specialists are not the same as manual employees, a term often used in industry research to describe construction workers undertaking physical tasks. While the specialist workforce estimate of 466,754 in Table 5 may include a large proportion of manual workers, it will also include specialists who would be defined as non-manual, for example computer building information modelling technicians in the woodworking sector or CAD designers in the civil engineering sector.

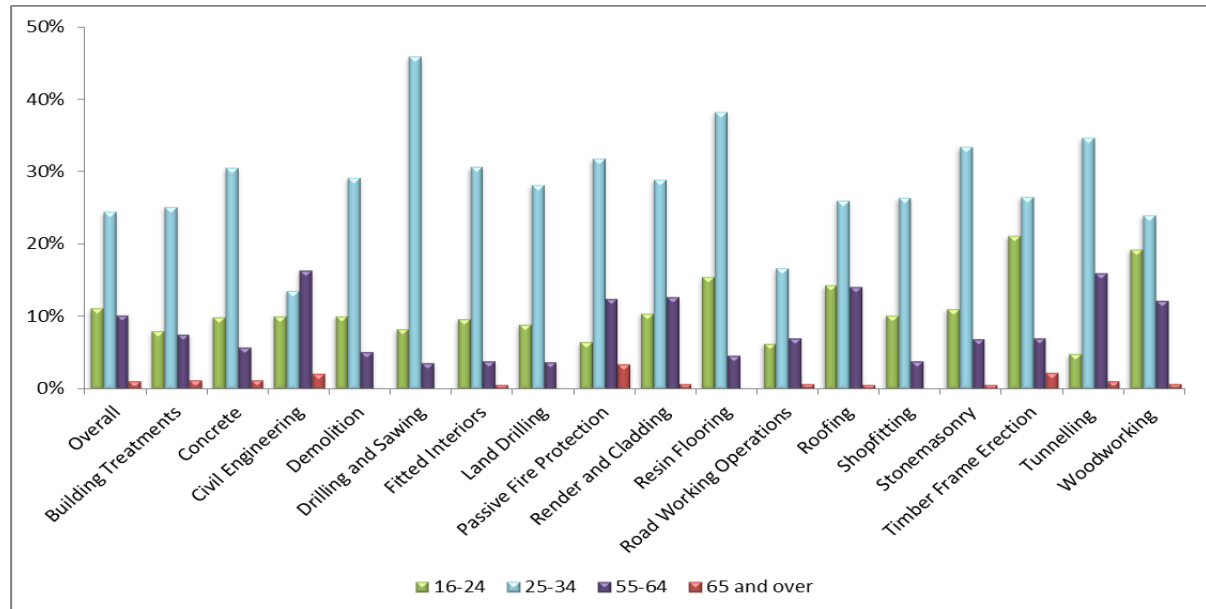
¹² ONS, Labour Market Statistics, Employment by age band and SOC2010 occupation, Four quarter average, Summer 2011 to Spring 2012 inclusive

¹³ Throughout the remainder of the report, base figures indicated in responses represent data from questions where respondents were able to provide multiple answer options.



to 32.1% in wider construction. This is borne out further by the fact that a significantly higher proportion of the overall construction industry (18.9%) is aged 55 and over compared to the specialist sector (11.3%) and Figure 4 shows the proportions of specialist employees per business aged 16 to 34 and 55 and over.

Figure 3 Average proportion of specialist employees per business – by age band



Base = 1,453 responses

If an ageing workforce is defined as one with an above average proportion of employees aged over 55 and a below average proportion of employees under 35, results show the specialist sector most likely to employ an ageing specialist workforce is civil engineering (based on the overall average proportions for the specialist sector). This, alongside road working operations, has the lowest proportion of specialist employees aged 16 to 34 (23.7%) and the highest proportion of specialists aged 55 and over (18.5%; Figure 3). Employers in the passive fire protection, render and cladding, roofing, tunnelling and woodworking sectors also report above average proportions of specialists aged 55 and over.

For passive fire protection and tunnelling, these results align to findings from the Trade Association and Federation interviews. The relevant tunnelling representative advised that the sector’s workforce is ageing and few new entrants are entering into employment:

“We really need more young recruits to replace the older workforce.”

The tunnelling sector employs the lowest proportions of 16 to 24 year old employees and one of the highest proportions of employees aged 55 to 64, which may explain why the workforce is viewed as ageing by the relevant Trade Association/Federation. However, this is balanced somewhat by the sector employing an above average proportion of 25 to 34 year olds (Figure 3). While for passive fire protection, the relevant Trade Association suggested companies in the sector simply do not recruit young people. Similarly, Trade Associations and Federations from the shopfitting, resin flooring and stonemasonry suggest their industries are currently disadvantaged by ageing workforces. However, with the exception of



resin flooring, these views are also not supported by information gathered during the employer interviews (Figure 3).

The percentage of employees in each age category in each sector is shown in Table 7 below. These percentages have also been converted into estimated workforce numbers in Table 8. This has been calculated by identifying the percentages of specialists and non-specialists from the total number of employees reported by employers in each sector.



Table 7 Percentages of employees in each sector by age band

Specialist Employees							Non-Specialist Employees					
Sector	16-24	25-34	35-44	45-54	55-64	65 and over	16-24	25-34	35-44	45-54	55-64	65 and over
Building and Remedial Treatments	8.1%	25.2%	36.6%	21.4%	7.6%	1.2%	2.1%	25.8%	31.8%	30.1%	10.2%	0.0%
Concrete	10.0%	30.6%	28.3%	23.9%	5.8%	1.3%	4.1%	18.5%	34.2%	21.1%	21.1%	1.0%
Civil Engineering	10.1%	13.6%	43.4%	14.4%	16.4%	2.1%	14.9%	17.9%	21.4%	33.9%	11.5%	0.4%
Demolition	10.1%	29.2%	37.3%	17.9%	5.2%	0.3%	6.5%	22.9%	38.4%	25.1%	7.1%	0.0%
Drilling and Sawing	8.3%	46.0%	28.7%	13.4%	3.6%	0.0%	10.1%	4.3%	48.2%	25.2%	11.5%	0.7%
Fitted Interiors	9.7%	30.7%	36.7%	18.5%	3.9%	0.6%	8.5%	29.5%	37.7%	19.2%	3.9%	1.1%
Land Drilling	8.9%	28.2%	32.8%	26.0%	3.8%	0.3%	12.0%	21.9%	32.1%	21.6%	10.5%	1.8%
Passive Fire Protection	6.5%	31.8%	26.5%	19.3%	12.5%	3.4%	16.2%	27.9%	23.4%	12.6%	14.4%	5.4%
Render and Cladding	10.5%	29.0%	27.2%	19.8%	12.7%	0.8%	11.7%	24.9%	23.4%	21.8%	16.2%	2.0%
Resin Flooring	15.5%	38.3%	23.7%	17.4%	4.7%	0.3%	8.2%	18.9%	35.2%	29.6%	6.9%	1.3%
Road Working Operations	6.3%	16.7%	35.5%	33.7%	7.0%	0.7%	0.0%	45.2%	27.4%	11.9%	14.3%	1.2%
Roofing	14.3%	26.1%	22.6%	22.3%	14.1%	0.6%	11.7%	18.8%	29.8%	33.7%	6.1%	0.0%
Shopfitting	10.2%	26.5%	39.8%	19.6%	3.9%	0.0%	16.9%	34.4%	29.5%	16.1%	3.0%	0.0%
Stonemasonry	11.1%	33.5%	25.7%	22.2%	6.9%	0.6%	7.6%	26.3%	40.2%	19.2%	6.7%	0.0%
Timber Frame Erection	21.2%	26.6%	28.2%	14.6%	7.1%	2.3%	13.3%	23.7%	33.6%	22.7%	6.6%	0.0%
Tunnelling	4.9%	34.7%	24.6%	18.7%	16.0%	1.1%	8.2%	27.5%	23.7%	21.3%	19.3%	0.0%
Woodworking	19.3%	24.0%	24.6%	19.0%	12.2%	0.8%	13.7%	22.7%	23.5%	24.9%	14.3%	0.8%
Total	11.0%	24.2%	33.4%	20.1%	10.3%	1.0%	11.0%	24.2%	33.4%	20.1%	10.3%	1.0%

Base = 3,797 responses



Table 8 Estimated Number of employees per business by age band

<i>Specialist Employees</i>								<i>Non-Specialist Employees</i>						
Sector	16-24	25-34	35-44	45-54	55-64	65 and over	Total	16-24	25-34	35-44	45-54	55-64	65 and over	Total
Building and Remedial Treatments	29	90	130	76	27	4	357	4	53	66	62	21	0	207
Concrete	3,954	12,128	11,195	9,463	2,310	533	39,583	1,179	5,305	9,800	6,042	6,042	295	28,663
Civil Engineering	15,736	21,108	67,483	22,321	25,475	3,327	155,451	26,797	32,261	38,505	61,140	20,814	781	180,297
Demolition	210	604	774	371	108	6	2,073	464	1,625	2,727	1,779	503	0	7,098
Drilling and Sawing	285	1,582	985	462	122	0	3,437	1,643	704	7,863	4,108	1,878	117	16,314
Fitted Interiors	829	2,628	3,139	1,582	332	51	8,561	6,730	23,274	29,723	15,142	3,084	841	78,793
Land Drilling	3	10	11	9	1	0	35	184	337	493	332	161	28	1,535
Passive Fire Protection	41	202	168	122	80	21	635	40	70	58	31	36	13	249
Render and Cladding	607	1,675	1,566	1,141	733	45	5,768	698	1,487	1,396	1,305	971	121	5,979
Resin Flooring	1,058	2,614	1,620	1,188	324	22	6,826	1,036	2,392	4,465	3,747	877	159	12,676
Road Working Operations	2,976	7,869	16,730	15,870	3,306	331	47,081	0	5,325	3,223	1,401	1,681	140	11,770
Roofing	4,491	8,167	7,082	6,992	4,400	181	31,313	7,717	12,433	19,721	22,293	4,073	0	66,236
Shopfitting	15	38	57	28	6	0	144	601	1,221	1,046	572	107	0	3,545
Stonemasonry	68	205	158	136	42	4	613	65	225	343	164	57	0	853
Timber Frame Erection	2,897	3,627	3,849	1,991	973	310	13,647	2,084	3,721	5,283	3,572	1,042	0	15,701
Tunnelling	13	95	68	51	44	3	274	63	212	182	163	148	0	768
Woodworking	29,096	36,284	37,197	28,754	18,484	1,141	150,956	25,946	42,890	44,479	47,126	27,005	1,589	189,035
Total	62,307	98,928	152,212	90,556	56,768	5,979	466,751	75,252	133,532	169,373	168,980	68,500	4,084	619,721

Base = 3,797 responses

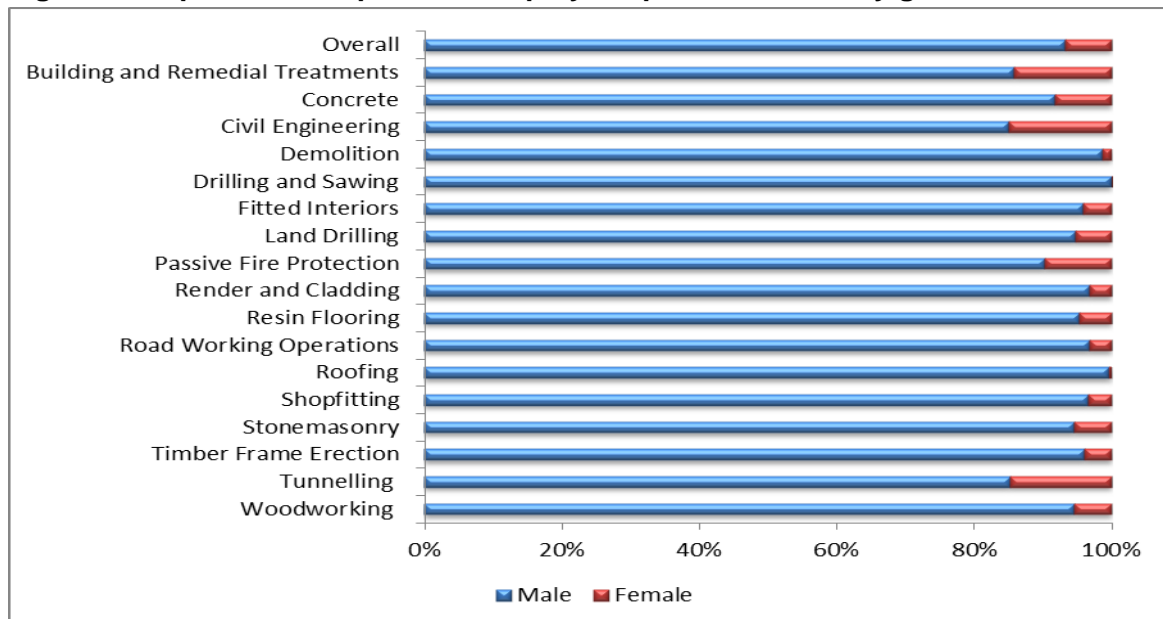


Gender

According to the latest ONS labour market statistics, 87.3% of the overall construction workforce is male and 12.7% is female¹⁴. The findings in this survey indicate very similar proportions for the specialist construction sector; 86.8% and 13.2% respectively (Figure 4). However, there is a huge difference in terms of the proportions of non-specialists against specialist staff. Whereas this research survey identified 33.7% of the non-specialist workforce as female, the figure falls to only 6.8% for specialists. The latest ONS labour market statistics report a ratio of 1.2 males to every 1 female in the administrative and support services sector¹⁵.

Many of the roles within the administrative and support services sector closely match the non-specialist roles employers provided information for during this research (i.e. office staff, receptionists, admin staff etc.). Traditionally these roles are more frequently fulfilled by females in the construction industry therefore this may help explain why survey results appear to indicate a much higher proportion of non-specialist females than specialists.

Figure 4 Proportions of specialist employees per business – by gender



Base = 1,231 responses

Building and remedial treatments, concrete, civil engineering, passive fire protection and tunnelling are the only sectors to report above average proportions of female specialists. Heavy construction sectors such as civil engineering and tunnelling report the highest proportions of specialist female employees. Within these sectors there are numerous occupations which require degree level qualifications, for example civil engineers. Higher level technical roles such as these may be more appealing to females than operative roles in other specialist sectors, for example drilling and sawing and roofing which record the lowest proportions of female specialists (0.1% and 0.4% respectively).

¹⁴ ONS, Labour Market Statistics, Employment by gender and ethnicity, Four quarter average, Summer 2011 to Spring 2012 inclusive

¹⁵ ONS, Labour Market Statistics, EMP16: Employment by industry (November 2012)



Ethnicity

In terms of ethnicity, survey results indicate 93.8% of the specialist construction workforce is white, with the remaining 6.2% made up of non-white groups including mixed, Asian or Asian British and Black, Caribbean or Black British (Table 9).

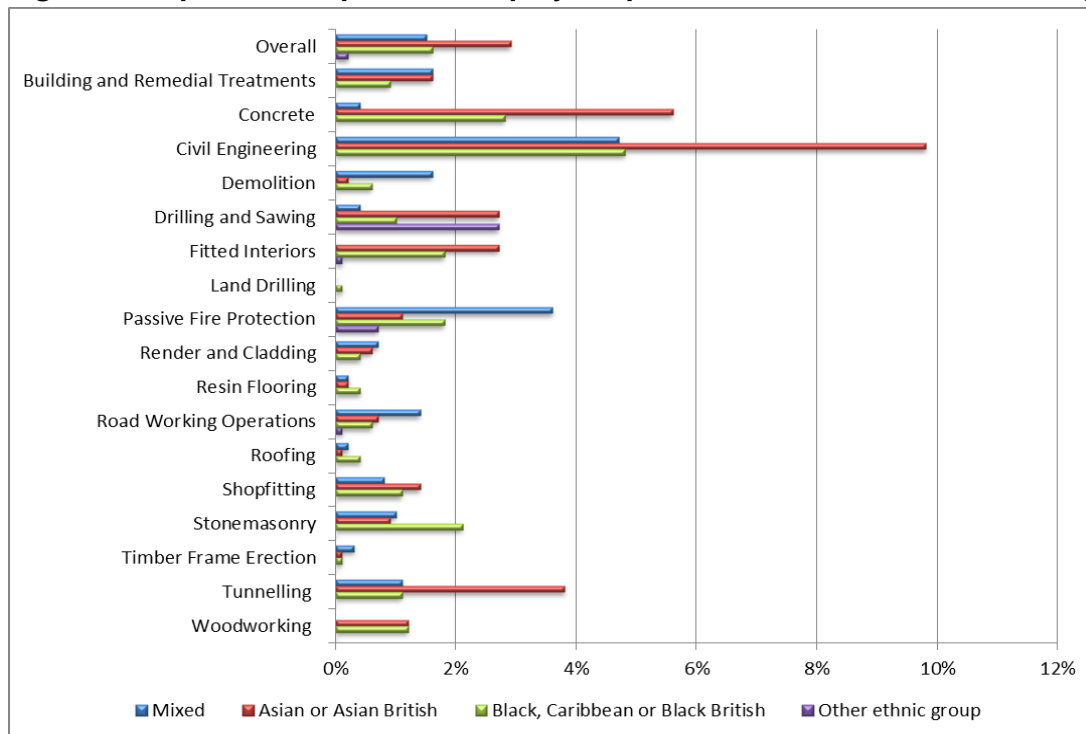
Table 9 Proportions of employees – by ethnicity

	White	Mixed	Asian or Asian British	Black, Caribbean or Black British	Other ethnic group
Specialists per business	92.7%	1.7%	3.5%	2.0%	0.1%
Non-specialists per business	97.3%	1.0%	1.0%	0.5%	0.3%
Overall specialist sector	93.8%	1.5%	2.9%	1.6%	0.2%

Base = 1,773 responses

The proportion of non-white specialist employees in each specialist sector is shown in Figure 5 and from this the proportion of specialist employees from mixed ethnic backgrounds is significantly above average in civil engineering and passive fire protection. Similarly, the proportion of specialists from Asian or Asian British backgrounds is significantly above average in concrete, civil engineering, and tunnelling. There are also an above average proportion of Black, Black Caribbean or Black British specialists in concrete, civil engineering, passive fire protection and stonemasonry.

Figure 5 Proportion of specialist employees per business – non-white ethnic groups



Base = 230 responses



Statistical Note: Where proportions of employers indicate specialist or non-specialist employees in the 'Other ethnic group' category, further detail was not provided on the exact ethnicity. Extra detail was provided for specialists in civil engineering, land drilling, render and cladding, passive fire protection and road working operations and for non-specialists in demolition, render and cladding and tunnelling. These responses have however, been excluded from the calculations presented in Figure 6, as they relate to employees nationality, not their ethnic background. For example, one land drilling company confirmed it employs some 180 specialists in the 'Other ethnic group' category. These employees were identified as Polish workers, but it is not clear whether they are from White Polish background or another ethnic group.

Survey data does not explain why there are higher proportions of specialist employees from these non-white ethnic backgrounds in these specific specialist sectors. There are numerous possible reasons, such as, employers may have instigated targeted action to increase recruitment of individuals in these groups, or responded to a need for specific specialist skills by recruiting individuals from outside the UK. Alternatively, employment levels may reflect a high concentration of capable individuals living in areas of the UK where specific work is being undertaken, or a response to marketing initiatives aimed at encouraging the recruitment of minority ethnic groups. Further research with employers in these specific sectors would be useful to learn why and how they have come to employ above average proportions of non-white specialists and with employers in the remaining sectors to understand why the representation of non-white specialists is below average.



5. Skills Gap Analysis

This section of the report presents the findings from an in-depth skills gap analysis. The skills gap analysis was conducted through a staged approach:

- 1. Employers were asked to provide details of the specialist occupations they currently employ, the most important skills within these occupations and ratings for their specialist employees in a number of predefined key skills areas;*
- 2. Existing skills deficiencies and gaps were identified as well as the causes and impacts of skills gaps;*
- 3. Analysis also examined the number of vacancies currently available, demand for specialist employees and the level and types of training currently undertaken.*

5.1 The Skills Situation

Employers provided details of some 8,519¹⁶ specialist employees currently in employment. The occupations with the highest density employment in each sector and the most important skills utilised by specialist employees in these occupations are detailed in Table 10.

A number of employers cited qualifications or the relevant CSCS card as the most important elements of specific specialist roles and where relevant these have been included in the most important skills section in Table 10. While specialist practical skills and knowledge are of paramount importance to the listed occupations, generic skills and knowledge are also crucial, for example, health and safety awareness, communication skills and team working are all cited as some of the most important skills held by specialist employees. Employers also clearly value their specialist staff holding the relevant NVQ or similar qualification and CSCS card for their sector. The latter may be particularly valued at the operative level as it permits employees to work on site.

¹⁶ 24,379 before removing outliers using IQR*1.5



Table 10 Specialist occupations highest density employment and most important skills

Sector	Specialist Occupations Highest Density Employment	Most Important Skills
Building and remedial treatments	Timber and Damp Proofing Treatment Specialists	Knowledge of infestations and appropriate treatments; implementing treatment methods including damp proofing and treatments for different types of timber; identifying and using appropriate chemicals; operating machinery.
Concrete	Engineers (Concrete/Civil/Design)	Producing technically accurate designs; degree in engineering.
	Concrete Floor Layers	Concrete Flooring NVQ Level 2; providing finishes to floors;
	Concrete Site Operatives	An NVQ Level 2 in the relevant concreting occupation; operating machinery; specifying, mixing and laying concrete to specification; driving.
Civil Engineering	Civil Engineers	Degree in Civil Engineering; NVQs relating to specialist equipment and machinery; producing technically accurate designs and drawings; using IT to produce designs; surveying sites; operating plant; excavating; pipe laying; health and safety awareness; asbestos awareness; setting out; ordering and testing materials; quality assurance; time management; communication skills.
Demolition	Demolition Operatives	Level 2 NVQ in Demolition; relevant CSCS Card; working safely on site; asbestos awareness; operating machinery; following instructions accurately.
Drilling and sawing	Drillers and Sawers	Operating machinery safely and accurately including diamond drills, track saws and concrete saws.
Fitted Interiors	Interior Fitters	Relevant NVQ Level 2 (could include ceiling fixing, dry lining, partitioning, woodworking, shopfitting etc.); relevant CSCS card.
Land Drilling	Land Drillers	Operating machinery and drilling equipment including rotary drilling and hydraulic equipment.
Passive Fire Protection	Passive Fire Protection Installers	Product knowledge i.e. the appropriate products to use in different situations; knowledge of relevant legislation and regulations; methods of fitting/installing protection products; interpreting technical information; fibre spraying; joinery skills to fit fire doors.
Render and Cladding	External Wall Insulation Installers	Trowel skills; knowledge of EWI systems and products and installation techniques; practical installation skills; applying render; plastering; dry lining; operating machinery.
Resin Flooring	Floor Layers	Relevant NVQ Level 2; relevant CSCS card; preparing and laying floors to specification; driving and punctuality; communication skills; team-working; self-management including working to set targets; following instructions accurately; customer service skills.



Table 10 continued

Sector	Specialist Occupations Highest Density Employment	Most Important Skills
Road Working Operations	Road Markers	Relevant NVQ Level 2; relevant CSCS card; road safety awareness; producing accurate road markings; marking out to specification; knowledge of materials; traffic management; communication skills; organisation skills; team-working; customer service skills.
	Road Planers	Relevant NVQ Level 2; relevant CSCS card; practical planing skills; operating machinery.
	Road Surface Dressers	Relevant NVQ Level 2; relevant CSCS card; operating machinery; practical surfacing skills; laying asphalt; knowledge and application of surface treatment processes.
Roofing	Roofers (covers various types of roofing activity)	Relevant NVQ Level 2; relevant CSCS card; cut slate; slate single ply roofs; tiling; re-roofing; installing new slates and tiles; working at height; health and safety including ladder and asbestos awareness; cutting and measuring; product knowledge; working accurately to specification; battering; filing; leadwork; knowledge and practical skills relating to installing new technology (solar PV).
Shopfitting	Project Managers	Site Manager Safety Training Scheme (SMSTS) qualification; relevant NVQ; relevant CSCS card; commercial experience to understand client requirements.
	Estimators/Surveyors	Relevant NVQ; relevant CSCS card; professional estimating/surveying qualifications.
	Shopfitters	Relevant NVQ Level 2; relevant CSCS card; manufacturing and installing cabinets; fitting tiles; operating machinery; understanding client requirements; hand skills.
Stonemasonry	Stonemasons (Banker, Fixer, Memorial and Monument Masons)	Installing stone; carving and reproducing stone; cutting stone; operating machinery; restoring stone; repairing stone; working accurately and to specification; producing hand finishes; shaping and lettering.
Timber Frame Erection	Timber Frame Erectors	Relevant NVQ ; knowledge of different types of timber frame and installation procedures; installing and erecting timber frames; carpentry and joinery skills; health and safety awareness; communication skills.
Tunnelling	Tunnelling Engineers	Knowledge and skills relating to operating tunnel boring machinery; knowledge of mining, shafts and sinking; knowledge of tunnelling processes and selecting most suitable to the work at hand; setting out accurately to specification; installation and testing; supervisory and management skills; health and safety awareness; communication skills.
Woodworking	Joiners	Relevant NVQ Level 3; relevant CSCS card; cutting; sanding; carving; measuring; filing; working to measurements/specifications; operating machinery; producing windows, staircases, doors, frames, bespoke items; joint fitting; constructing/using moulds; using CAD/CNC machinery; attention to detail, health and safety awareness; producing quality products; working to own initiative; problem solving.



5.1.1 Current skills levels

To understand the current skills levels of the specialist sector workforce, employers were asked to rate their specialist employees in the following nine key skill areas (on a scale of 1 to 10, where 1 is unskilled and 10 is perfectly skilled):

Key Skill Areas
1. Practical specialist construction skills
2. Technical knowledge/theory of specialist construction processes
3. Mentoring/on the job training/passing on specialist construction knowledge and skills to new recruits
4. Understanding new legislation which impacts on the business
5. Management skills
6. Communication skills
7. Customer service skills
8. Team working skills
9. IT Skills

Overall and across the specialist sectors employers' rate their specialist employees' practical specialist construction skills and technical knowledge (key skill areas 1 and 2) more highly than their generic skills, with the exception of customer service and team-working skills (key skill areas 7 and 8).

Employers in render and cladding, rate the practical specialist skills of specialist employees significantly below average despite a range of practical installation skills being cited as amongst the most important for external wall insulation installers. Similarly, woodworking specialists' technical knowledge and IT skills are rated significantly below average, yet working to measurements and specifications and operating computer assisted design (CAD) and computer numerically controlled machinery (CNC) are cited as the most important skills for today's specialist joiners.

Both the demolition and tunnelling sectors report significantly below average ratings for communication skills, yet both highlight communication and safety on site as extremely important to demolition operatives and tunnelling engineers.

These results suggest employers in some sectors may be lacking specific skills which are amongst the most important to their business. These are skills priorities and vital to remain productive in an increasingly competitive marketplace. This requires high-quality training provision to be available in the relevant sectors, discussed in detail in Section 5.3.

5.1.2 Future importance and priority skills

Employers were asked to rate the future importance of each key skill area to their business on a scale of 1 to 10 (where 1 is not at all important and 10 is critically important). These results have been analysed by comparing the future importance of skills against existing skills levels. The overall average (mean) ratings provided by employers are shown in Table 11. The priority skills areas are listed in rank order of current skill level, identifying job specific practical skills and technical knowledge for specialists as the highest rated by employers, with team working and customer service skills also rated very highly (Table 11).



Table 11 Average (mean) ratings for level and future importance of key skill areas

Key Skill Area	Current skill level	Future Importance
Practical specialist construction skills	8.6	9.1
Team working skills	8.3	8.7
Technical knowledge/theory of specialist construction processes	8.3	8.9
Customer service skills	8.2	8.6
Mentoring/on the job training/ to new recruits	8.0	8.6
Communication skills	7.9	8.6
Management skills	7.7	8.2
Understanding new legislation which impacts on the business	7.5	8.3
IT skills	6.7	7.3

Base = 16,875 responses

Employers identify all key skill areas as being more important for their businesses in future, suggesting perhaps that they regard all skill areas as being in need of some development. For employers themselves, this result may inform a review of the skills levels of their workforces, while for CITB and Trade Associations/Federations, it is possible there is a requirement to increase employer awareness of the types of training available which will develop the priority skills, which appear to be in need of improvement. To identify employers' skills needs priorities, the percentage differences were calculated between employers' ratings for the current skills of their specialist employees and the future importance of each key skill area to their business.

Employers are most in need of developing key skill area 4 '**understanding new legislation which impacts on the business**' and which emerges as the priority key skill area for the specialist sector and those most in need of improving this skill are, shopfitting, stonemasonry and timber frame erection.

For stonemasonry, it is less clear why employers may feel the need to improve their understanding of new legislation which may impact on the business. The low carbon and green agenda are arguably less relevant to stonemasonry businesses than for timber framing and shopfitting. Further research may be required with stonemasonry employers to understand the legislation, which they feel their understanding is lacking in and which may require improvement in future.



In shopfitting, businesses may seek to both build sustainable business units and portray a 'greener' image of their company, but it is also possible that employers feel they need to improve their understanding of new legislation as a result of the negative impacts they are experiencing resulting from the increasingly stringent sub-contracting arrangements. Taking into account the evidence provided by the National Association of Shopfitters regarding this aspect, as well as major organisations covering the entire specialist sector (See Section 3), any support CITB can give to help reduce such contracting terms could be of significant benefit to employers.

Passive fire protection has been excluded from the chart as employers returned a negative percentage difference (-3.1%). This suggests specialist employees are sufficiently adept at understanding new legislation which impacts on the business. CITB, Trade Associations/Federations and employers in the sector may consider this a particularly positive finding given the highly regulated nature of the passive fire protection industry.

The three specialist sectors with the highest percentage differences between current skills levels and future importance to the business in each key skill area (ordered from highest to lowest percentage difference) is shown in Table 12 and these are most in need of developing skills in the relevant areas.

Table 12 Sectors with highest percentage differences for each key skill area

Key Skill Area	Top 3 Sectors
1. Practical specialist construction skills	<i>Building and remedial treatments Render and cladding Tunnelling</i>
2. Technical knowledge/theory of specialist construction processes	<i>Tunnelling Woodworking Building and remedial treatments</i>
3. Mentoring/on the job training/passing on specialist construction knowledge/skills	<i>Woodworking Concrete Civil Engineering</i>
4. Understanding new legislation which impacts on the business	<i>Timber frame erection Stonemasonry Shopfitting</i>
5. Management skills	<i>Tunnelling Shopfitting Land drilling</i>
6. Communication skills	<i>Tunnelling Shopfitting Concrete</i>
7. Customer service skills	<i>Shopfitting Tunnelling Land drilling</i>
8. Team working skills	<i>Woodworking Building and remedial treatments Concrete</i>
9. IT Skills	<i>Tunnelling Building and remedial treatments Shopfitting</i>



The shopfitting (5) and tunnelling (6) sectors appear most frequently, with generic skills relating to management, communication, customer service and IT identified as in need of further development.

While shopfitting employers did not explicitly mention IT skills when identifying the most important skills in their sector, the National Association of Shopfitters advised of skills gaps related to operating computer numerically controlled machinery (CNC) due to the cost of the machinery being too high for training providers and Building Information Modelling (BIM)

Tunnelling employers identified management and communication skills amongst the most important for tunnelling specialists, as well as a range of practical specialist skills and technical knowledge, two areas in which tunnelling is most in need of further development (Tables 10 and 11). The recently launched Apprenticeships in Tunnelling are likely to provide coverage of the specialist construction areas and the development of communication skills, however the relevant training provider in the tunnelling sector advised that a gap exists in training provision at the supervisory and management level. This gap is perceived to exist as a result of companies implementing their own supervisory and management training and not recognising the provision of others in cases where specialist employees move between organisations. The training provider interviewed suggested they are currently attempting to develop a standardised training programme to ensure recognition and transferability of these skills across tunnelling.

This development has the potential to provide tunnelling companies with a single source of training at supervisory and management levels. If accepted by employers, it may help reduce duplication of training within the sector, which in turn could provide greater freedom for training budgets to be spent on other important areas such as improving the practical specialist construction skills and technical knowledge of tunnelling specialists. As such, CITB, as the SSC and as an authoritative voice for the construction industry, may be well placed to facilitate discussions between major tunnelling employers to help highlight the benefits of this new training offer and how it may enable a greater focus on raising skills levels in other specific areas across the sector, for example, in spray concrete.

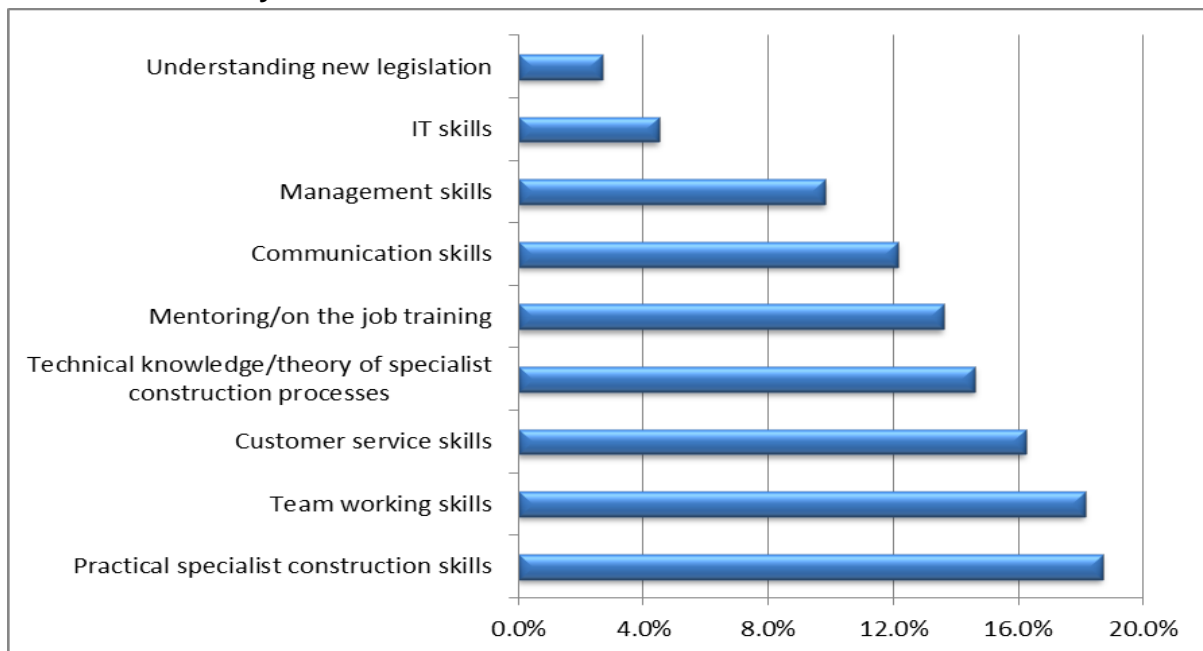
5.1.3 Skills and the low carbon agenda/Green Deal

Employers were asked how important each key skill area will be in relation to their business meeting the requirements of the low carbon agenda and initiatives such as the Green Deal, or Strategic Energy Framework and Green New Deal for Northern Ireland companies (on a scale of 1-10, with 1 being not at all important and 10 being critically important). Percentage differences were calculated between employers' average (mean) ratings for this question and for the question rating the skills of their specialists in each key skill area.

Results for the overall specialist sector identify practical specialist construction skills as the main skills priority for businesses to meet the requirements of the low carbon agenda and Green Deal (Figure 7).



Figure 7 Percentage differences for skills levels and future importance to green initiatives in all key skills areas



Base = 12,996 responses

From employer respondents, a total of 314 employers (31.3%) said they are unaware of the low carbon agenda or Green Deal. Concrete, shopfitting, tunnelling, demolition, render and cladding and road operations in this order were the most aware of this and stonemasonry, civil engineering, building and remedial treatments, roofing and woodworking employers the least aware. The latter is despite one industry representative suggesting that working with wood offers a better insight into sustainability to the trade.

This respondent also suggested the Green Deal could be influential for the sector if it requires companies to become certified installers of woodworking products. At present a problem is perceived whereby woodworking manufacturers feel they have to install their own products for them to be installed properly on site. Certified installation requirements could ensure manufacturers are willing to leave the installation of their products to installers, enabling them to concentrate solely on manufacturing, which may increase output and therefore productivity within the sector.

For woodworking employers, this evidence suggests an awareness of initiatives such as the Green Deal could potentially lead to increased business in future and it may be worthwhile CITB and relevant Trade Associations/Federations considering raising awareness of potential opportunities. Employers from the building and remedial treatments and roofing sectors are also among the least aware of these initiatives. One industry representative suggested the Green Deal may present specialists with significant opportunities:

“Most people don't realise when installed what the implications of putting insulation in are. They don't look at vapour issues, humidity, and condensation. Atmospheric moisture management will be essential so understanding that properly will be a huge opportunity for our members.”



Similarly, Trade Associations and Federations interviewed in the roofing sector suggested solar photo-voltaic roofing structures, in particular, present new opportunities for specialist firms. This type of roofing links closely to the Green Deal and the government's overarching energy efficiency and reduction targets.

CITB could consider working with the relevant Trade Associations/Federations in these and other specialist sectors, which are least aware of these green initiatives (but seemingly best placed to take advantage of these), to raise awareness and direct employers to the requirements they must meet (including training) to access the opportunities (See Section 7).

5.2 Skills Gaps

This section of the skills gap analysis focuses on the specific skills deficiencies and gaps which are perceived to exist within the specialist sector. The causes and impacts of these deficiencies and gaps are also examined, as well as the number of vacancies available in each occupational area, how many of these vacancies are currently proving hard-to-fill and methods for supplying skills into the sector via recruitment and training.

5.2.1 Proficiency of the workforce

Of the 1,003 employers who completed the survey, a total of 269 respondents identified skills deficiencies in their workforce (27%) with a further 109 identifying skills shortages (i.e. skills missing completely(11%).

Therefore just over a quarter of employers in the specialist sector were prepared to positively identify at least one skills deficiency in their specialist workforces, with just over one in ten identifying skills which are totally missing.

This unprompted question suggests around one in four employers experience issues with the proficiency of their staff.

Neither the size nor age of company appears from the data to have any real impact on whether employers have skills deficiencies.

Table 13 indicates a slightly lower proportion of micro-companies (0-9 employees) reporting skills deficiencies and a slightly higher proportion of SMEs (10-249) reporting them, but there is a remarkably similar profile throughout the specialist sector which mirrors the size profile of the sector as a whole. This indicates that no particular size of company is more or less likely to experience the deficiencies identified.

A similar pattern is also evident when comparing the proportions of companies of different age reporting skills deficiencies as compared to the overall specialist sector company age profile. Taking into account the margins of error there appears to be no greater or lesser likelihood of a company experiencing skills deficiencies as a result of the length of time it has been in business (Table 13).



Table 13 Reported skills deficiencies by business size and company age

Employee size band	0-9	10-49	50-249	250+
Counts	81	121	49	18
Report skills deficiencies	30.1%	45.0%	18.2%	6.7%
Overall size profile for specialist companies	35.3%	43.1%	16.3%	5.3%
Business age band	0-2 years	3-5 years	6-10 years	11+ years
Counts	9	22	37	201
Report skills deficiencies	3.3%	8.2%	13.8%	74.7%
Overall company age profile	3.3%	7.9%	13.7%	75.2%

Base = 269 responses

5.2.2 Skills gaps and deficiencies

Employers were asked to provide details of skills deficiencies and gaps which exist within their specialist workforce, with these defined as:

Deficiencies Levels of skill which may be considered below the required standard

Gaps Skills which employees are missing completely

The most frequently cited gaps and deficiencies and the occupations to which they relate are set out in Table 14 along with the number of responses received for each identified skills deficiency and gap.

The view of a proficient specialist sector workforce is supported by the fact that the majority of employers in all specialist sectors said they do not have any skills deficiencies or gaps. For this reason the information contained in Table 14 should be treated as indicative rather than absolute or representative of the entire specialist sector, as very low numbers of responses were received across the sectors. While some employers responded to the question of identifying skills deficiencies and gaps in their workforce by citing specific qualifications, industry experience or CSCS cards, insufficient data was provided to enable the identification of employers' preference for these or specific skills and knowledge.



Table 14 Skills deficiencies and gaps by sector

Sector	Occupation	Skills Deficiencies	Occupation	Skills Gaps
Building and Remedial Treatments	Treatment Specialists	Using chemicals and pesticides (3)	Treatment Specialists	IT Skills (2)
Concrete	All Specialists	IT skills/Health and safety (4)	Concrete Site Operatives/Engineers	Utilising new technological processes (2)
Civil Engineering	Plant Operatives	Operation of plant/heavy machinery (7)	Asphalt Surfacers	Asphalt surfacing (2)
Demolition	Demolition Plant Operatives	Operating dumpers, rollers, 360 excavators and 10 tonne trucks (2)	Demolition Operatives	Skills developed through NVQ in Plant Operations (Level 3) (3)
Drilling and Sawing	Concrete Technicians/Diamond Drillers	Operating machinery (3)	Diamond Drillers	Waterproofing (water control) /Wire cutting (2)
Fitted Interiors	Joiners/Interior Fitters	Computer-Aided Design (CAD) (3)	Interior Fitters	Management skills/Operating machinery (2)
Land Drilling	Land Drillers	Drilling skills (3)	Land Drillers	Operating JCBs, trailers, forklifts, tele-handlers, agricultural tractors (5)
Passive Fire Protection	PFP Installers	Product knowledge (3)	PFP Installers	Fibre spraying (1)
Render and Cladding	External Wall Insulation Installers	Rendering and plastering skills (10)	External Wall Insulation Installers	Spray rendering (2)
Resin Flooring	Floor Layers	Product knowledge (3)	Floor Layers	Computer-Aided Design (CAD) skills (2)
Road Working Operations	Safety Marking Operative	Traffic management (2)	Paving Operative	Skilled pavers (2)
Roofing	Roofers	Installation of new technologies (i.e. solar panels) (7)	Roofers	Installation of new technologies (i.e. solar panels) (3)
Shopfitting	Shopfitters	3D Computer-Aided Design (CAD) (1)	None identified	None identified
Stonemasonry	Stonemasons	1. General building skills (2) 2. Banker work 3. CAD 4. Restoration skills 5. Carving stone (1)	Stonemasons	1. Tele Handling 2. Machinery Repair 3. Lime rendering 4. Specialist Carving Skills 5. Sandblasting 6. IT skills (1)
Timber Frame Erection	Timber Frame Erectors	Management skills/Technical knowledge (2)	Timber Frame Erectors	Trailer and forklift driving (1)
Tunnelling	Tunnellers	Spraying concrete (3)	None identified	None identified
Woodworking	Apprentice Joiners Joiners	Practical/hand skills Geometry skills (4)	Joiners	Sash window manufacture and installation (2)



Further skills gaps identified by specialist Trade Associations/Federations are shown in Table 15. In some cases these skills gaps align to those included in Table 14 and provide additional specificity to the employer findings. However, the information obtained from Trade Associations/Federations includes greater focus on generic skills such as management and customer service skills. This strengthens the view established in Section 5.1.1 that generic skills are very important to employers, if slightly less important than practical specialist construction skills and technical knowledge.

Table 15 Skills gaps identified by Trade Associations/Federations

Sector	Skills Gap
Building and Remedial Treatments	Business management
Concrete	Placing concrete Operation of robotic machinery (concrete crushing/breaking)
Demolition	CAD and computer based demolition modelling
Fitted Interiors	Supervisory and management skills
Road Working Operations	Operating machinery to specification (road planing) Supervisory skills (for operatives moving up to Supervisor level) (road surfacing)
Roofing	Customer service and management skills
Shopfitting	Operation of computer numerically controlled machinery (CNC)
Timber Frame Erection	Business management
Tunnelling	Spraying concrete
Woodworking	Hand finishing skills

In comparison to data presented in Section 5.1.2, the results in Tables 14 and 15 support the view that for shopfitting, IT skills and specifically those relating to the operation of CAD and CNC machinery are priority skills which can be both increased in terms of supply and improved.

The extent to which existing training provision meets the deficiencies and gaps identified is examined in Section 5.3.2.

5.2.3 Causes and impact of skills gaps

The possible causes of skills gaps presented to employers in the questionnaire are listed in ranked order below, identifying the skills gaps most affecting businesses in the specialist sector:

1. Lack of suitable specialist skills training courses
2. Lack of experience or staff having been recently recruited
3. Lack of convenient specialist skills training courses
4. Staff lack motivation
5. Inability of workforce to keep up with change
6. Recruitment problems (unsuitable applicants for roles)
7. Failure of the business to train and develop staff
8. Inability to replace experienced employees with suitable recruits



9. Specialist employees moving into other non-construction sectors
10. Staff turnover (problems retaining existing employees)
11. Specialist employees moving into other construction sectors

Training appears to be a key contributor to employers' skills gaps – lack of suitable training courses is the most frequently cited skills issue amongst specialist sector employers, with convenient specialist training courses also very high on the list.

The list below ranks the impact of skills gaps in order of those most experienced by specialist sector businesses:

1. Increasing the workload for other staff
2. Outsourcing work to sub-contractors
3. Increasing operating costs
4. Losing business or orders to competitors
5. Having difficulties in meeting quality standards
6. Having difficulties introducing new working practices
7. Delaying developing new products or services
8. Unable to apply for new tendering opportunities

The main impacts of skills gaps are increasing the burden on other staff and having to outsource work to sub-contractors at increased expense. In other words, employers seem to be overcoming the problems they face, however losing business to competitors and having quality problems still appear relatively high on the list.

Across the sectors employers identified both internally and externally driven causes of skills gaps however, overall, just over half say there are no specific causes of skills gaps (52.3%).

External forces causing skills gaps include problems with the supply of skills. The availability of specialist training courses appears to be an issue for employers in the building and remedial treatments, render and cladding and passive fire protection sectors. The former two also identify a potential problem relating to the availability of convenient training courses.

Evidence gathered from the training provider interview in the building and remedial treatments sector suggests there are no gaps in specialist training provision, however they did note that they are the only training provider offering specialist training in the UK. It is possible that sector employers are therefore unaware of the specialist training available if only one provider is currently offering it in the UK. , CITB and the relevant Trade Association may wish to consider increasing marketing of the training to building and remedial treatments employers.

Training providers in render and cladding and passive fire protection advised new specialist provision is currently being developed in both sectors. This could reduce the negative impacts reported as a result of a lack of suitable and convenient training courses.



In terms of internal drivers of skills gaps, an inability to keep up with change appears to be an issue for roofing and tunnelling employers. For tunnelling, this is typified by the perceived lack of specialist employees trained in spraying concrete, as identified by both employers and the relevant Trade Association. For roofing, this result may relate to a lack of awareness of the low carbon agenda and Green Deal and specifically relevant new roofing technologies such as photo-voltaic roofing structures (see Section 5.1.3). Other issues include failure of businesses to recruit and train staff in the drilling and sawing, land drilling and fitted interiors sectors and recently recruited staff lacking experience in the civil engineering, land drilling and drilling and sawing sectors.

In these cases, businesses may need to take a more introspective view to reduce any negative impacts of skills gaps they may experience. CITB and Trade Associations/Federations offer many support services and implement promotional techniques aimed at encouraging companies to recruit and train their staff, however the choice to do so remains with the individual business. Where businesses choose not to develop their staff, it is likely they will be more susceptible to the negative impacts of skills gaps.

Where employers indicated causes of skills gaps beyond the options presented in the questionnaire, these mainly concerned the costs of specific training courses and skilled employees retiring or leaving the business. For 14 of the 17 sectors in this survey, the majority of employers say skills gaps have no impact on the business. However, aside from these, the highest proportions of employers in multiple sectors identify the following impacts which could potentially threaten the existence of a business:

- Increasing operating costs - drilling and sawing, land drilling and stonemasonry;
- Increasing workload for other staff - drilling and sawing, land drilling, fitted interiors and render and cladding;
- Outsourcing work to sub-contractors - land drilling, render and cladding and stonemasonry.

The results of this survey suggest the following sectors are most affected by skills gaps, with each one reporting an above average proportion of employers experiencing at least one specific impact of skills gaps:

- Drilling and sawing
- Fitted interiors
- Land drilling
- Passive fire protection
- Render and cladding
- Stonemasonry
- Tunnelling

Employers also identified impacts of skills gaps outside those included in the questionnaire, which included businesses working less efficiently and with less flexibility to respond to



different situations and members of staff having to fill multiple roles and specialist employees' progression prospects being limited.

Businesses of all ages appear to be affected by a lack of specialist or convenient training provision. Variations are very slight, with businesses established in the last five years appearing more likely to be experiencing skills gaps caused by a lack of experience. In addition, businesses over six years old appear more likely to experience skill gaps as a result of failing to keep up with change.

For employers in businesses between 0 and 2 and 6 and 10 years old, skills gaps relate to the costs of training courses being too high. In contrast businesses established between 3 and 5 years ago suggest skills gaps are caused by specific employees requiring further training. However, for the longest running businesses (11 years+) skills gaps are caused by a lack of work in the specific skills gap area and dissatisfaction with the training provided by local providers.

It is possible that a review of advice and support for businesses in their first two years could also be applicable to and benefit micro- businesses, as they appear to be most affected by skills gaps, particularly in terms of increased workloads and issues with the supply of skills. As for recently established businesses, micro businesses are a key factor in driving the economic recovery. Any information CITB can provide to help these businesses avoid the negative impacts of skills gaps, such as signposting to training provision and the grants and funding available, may help to secure and increase their productivity.

5.2.4 Vacancies

Reflecting the current economic climate in the UK and the overall construction sector, there are very few vacancies across the surveyed specialist sector - a total of 692 were identified at an average of less than 1 per business (0.72). The majority of vacancies (54.9%) are for specialist operatives, followed by labourers (76), administration (71), management (45) and supervisory (41) and other category with 71 (specific positions such as in the accounts department or estimators). This aligns to the fact that the majority of skills deficiencies and gaps identified by employers are for specialist practical or technical skills i.e. skills most suited to specialist operatives (see Section 5.2.2).

Civil engineering and render and cladding account for just under half (48.1%) of all vacancies identified by employers. Civil engineering is also the only -sector to report vacancies in all occupational areas. Render and cladding records by far the highest proportion of vacancies in the 'Other' category (38.5%). These vacancies are for sub-contracting opportunities which supports the finding identified in Section 5.2.3 that an above average proportion of employers in the sector are outsourcing work to sub-contractors as a result of skills gaps experienced. In addition, some 94.9% of all vacancies are offered by businesses which have been in operation for at least 6 years, with 84.8% of these offered by businesses over 11 years old. However, it is important to note that older businesses are, on average, more likely to be larger than newer firms. Businesses over 11 years of age also accounted for 75.2% of the survey response.



Of the 380 specialist vacancies identified, employers reported that 136 of these are currently proving hard-to-fill, which suggests employers find over a third of specialist vacancies hard-to-fill. However, further analysis revealed that one large passive fire protection company reported 40 hard-to-fill specialist vacancies, skewing the results and over-estimating the total number of hard-to-fill vacancies within the sector. This outlier has been removed from the results presented in Table 16.

Table 16 Hard-to-fill vacancies

Sector	Total hard-to-fill vacancies	Proportion of all hard-to-fill vacancies
Building and Remedial Treatments	1	1.0%
Concrete	3	3.1%
Civil Engineering	15	15.6%
Demolition	8	8.3%
Drilling and Sawing	4	4.2%
Fitted Interiors	12	12.5%
Land Drilling	6	6.3%
Passive Fire Protection	2	2.1%
Render and Cladding	3	3.1%
Resin Flooring	11	11.5%
Road Working Operations	1	1.0%
Roofing	11	11.5%
Shopfitting	3	3.1%
Stonemasonry	4	4.2%
Timber Frame Erection	1	1.0%
Tunnelling	2	2.1%
Woodworking	9	9.4%
Total	96	100.0%

Base = 124 responses

Civil engineering, resin flooring, fitted interiors and roofing account for over half (51%) of hard-to-fill vacancies (Table 16). In addition, hard-to-fill vacancies (some 14% of all vacancies) are most prominent within micro and small businesses and businesses which have been in operation for at least six years.

In all sectors, the majority of hard-to-fill vacancies are due to the quality of applicants. The main problems identified are applicants' lack of specialist skills, knowledge, relevant qualifications or attitude and motivation to undertake the work. This aligns with findings from the National Specialist Contractors Council's (NSCC) State of Trade Report for Quarter 2 2012, which found that the principal reason for any recruitment difficulties experienced in the specialist sector had been the low number of applicants with the required skills and experience¹⁷.

¹⁷ National Specialist Contractors Council, State of Trade Report, Quarter 2, (2012)



The quality of applicants and specifically their lack of skills and knowledge are also almost exclusively the main reasons why vacancies are proving hard-to-fill in the sectors with the highest proportions of hard-to-fill vacancies of civil engineering, resin flooring, fitted interiors and roofing. Only a comparable proportion of employers in the civil engineering sector suggest vacancies are proving hard-to-fill for any other reason, in this case because of a lack of interest in the jobs available. Where respondents' provided other reasons for hard-to-fill vacancies, this included a lack of qualified applicants for highly specialised positions and the high costs associated with hiring new staff through recruitment agencies.

The majority of vacancies are filled in less than 2 months, with most filled within the first four weeks of advertising, regardless of the occupational area.

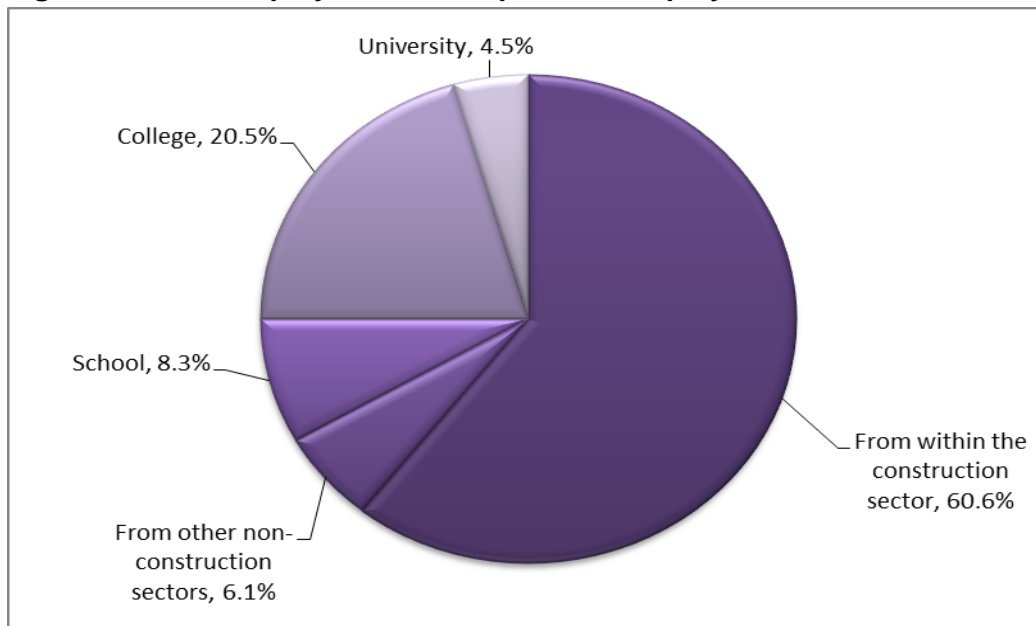
5.2.5 Recruitment

The most popular method (45%) of recruiting new employees (specialist and non-specialist employees) into the specialist sector is via word of mouth, with the next methods used being local and national newspapers and employers using recruitment agencies. Employers were also asked where they recruit their specialist employees from, with the three main categories being: construction sector; other industry sectors; educational routes including school, college and University.

The majority of employers (60.6%) recruit specialist employees from within the construction sector (Figure 8), with a further fifth being recruited directly from college (more than twice as many as recruited from school or University) and the proportion of employers who recruit from other, non-construction sectors at 6.1% is relatively low.



Figure 8 Where employers recruit specialist employees from



Base = 932 responses

5.3 Training

The previous sections of the skills gap analysis have assessed current skills and proficiency levels and identified priority skills, skills deficiencies and gaps and the number of vacancies currently available.

This section of the report builds upon this data by examining how training provision can help meet the future skills needs of the specialist sector. It includes an assessment of the types and amount of training undertaken, how far existing provision will meet the skills deficiencies and gaps identified and barriers and issues training providers face when providing training.

5.3.1 Training undertaken

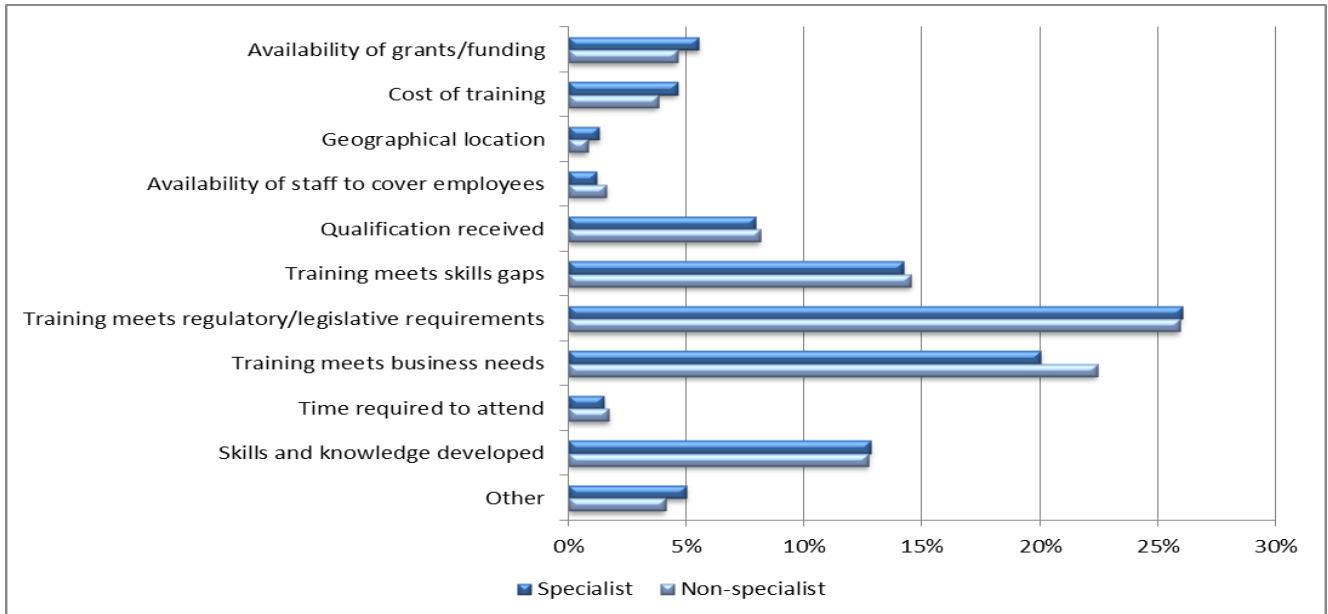
“Self-employed [are] largely unwilling or unable to take time off for training - the majority of training is delivered in workplaces” Fitted Interiors Trainer

Employers were asked what influences their decisions to provide training to specialist and non-specialist employees. Employers' decisions are more influenced by the extent to which training will meet business needs, fill existing skills gaps, improve employees' skills and knowledge and meet regulatory or legislative requirements than by the amount of funding available or the costs of training (Figure 9).



'Other' influences on employers' decisions to train mainly concern meeting health and safety requirements and the specific needs of contractors or customers who specify a particular type of training as a requirement of tender submissions.

Figure 9 Influences on employers' decisions to train



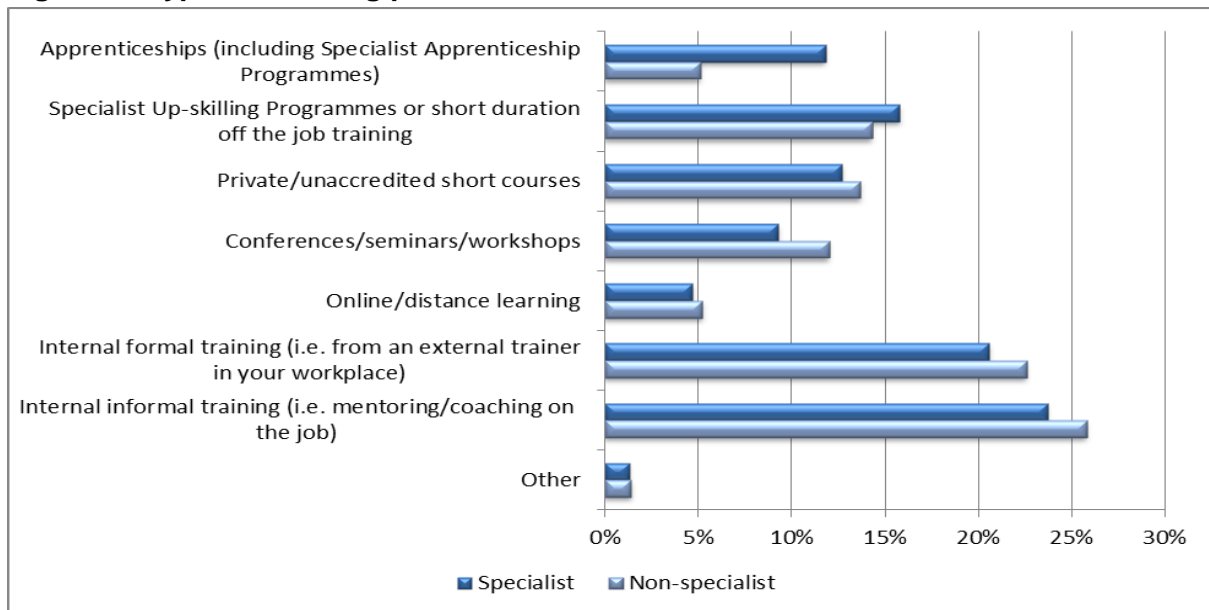
Base = 3,419 responses

Practical specialist construction skills and technical knowledge are developed most by specialist employers (33%), followed by management and supervisory skills (14%), team-working skills (13%), communication skills (12%) and customer services at 11%, with IT skills, literacy and numeracy and administrative skills between 8-6% respectively.

Employers favour internal training for both specialist and non-specialist staff. This includes formal training from external organisations delivering training in the workplace and informal training such as on-the-job mentoring and coaching (Figure 10). 'Other' types of training cited by employers include day courses and DVD based training.



Figure 10 Types of training provided



Base = 4,700 responses

With the exception of training providers in resin flooring, roofing, road safety markings, woodworking, drilling and sawing and tunnelling, who all said Apprenticeships are the most popular method of training they deliver, interviews with training providers confirmed that employers prefer shorter duration courses which require staff to spend as little time away from the workplace as possible.

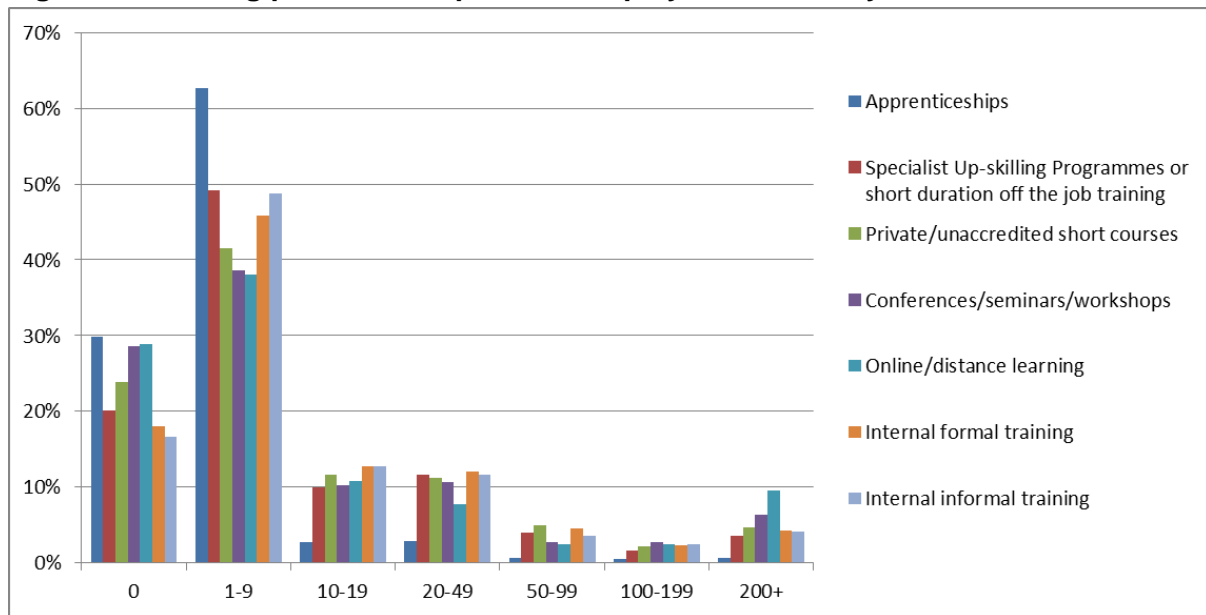
“Preference seems to be for short duration. Also informal training, generally in-house, with less time out of business is valued.” Resin Flooring Trainer

The amount of training undertaken by employers in 2012 also supports this view as shown in Figures 11 and 12. Internal formal and internal informal training appear to be the methods of training used most by employers providing training in 2012. All types of training were mainly provided to between one and nine employees in 2012 (Figures 11 and 12).

Of the employers who train their specialists on Apprenticeships, only 7.5% started more than 10 specialists on Apprenticeship programmes last year (Figure 11).



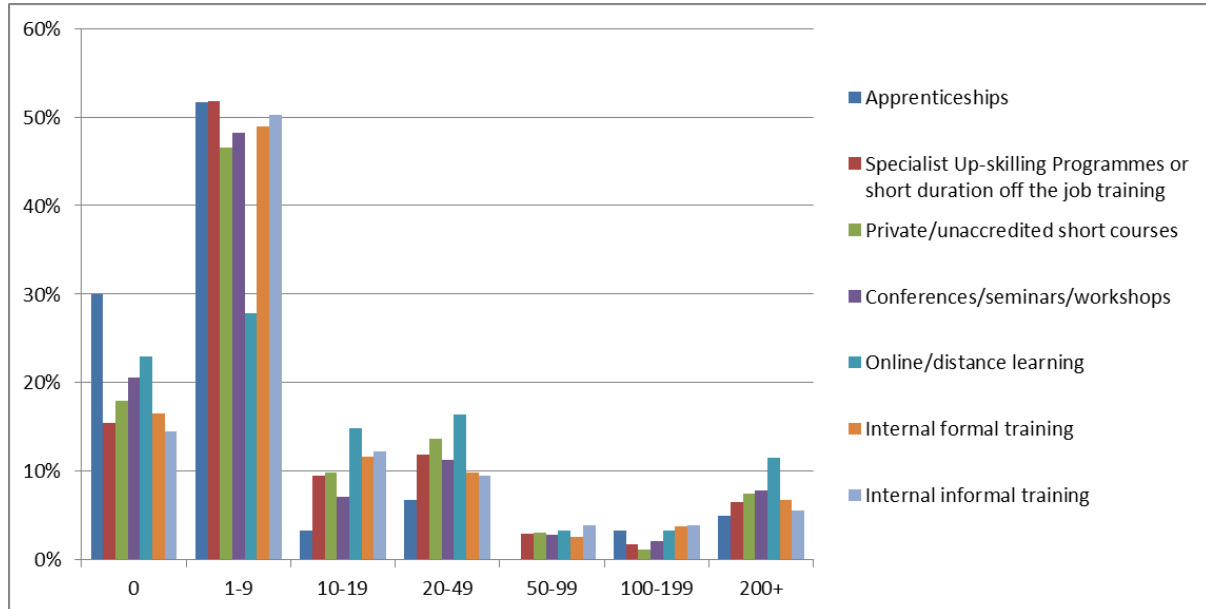
Figure 11 Training provided to specialist employees in 2012 by size of business



Base = 3,522 responses

Higher proportions of employers also trained their employees on Specialist Up-skilling Programmes and private unaccredited short courses than Apprenticeships in 2012 (Figures 11 and 12).

Figure 12 Training provided to non-specialist employees in 2012 by size of business



Base = 1,178 responses

Interviews with providers offering roofing, road surface treatment, land drilling and resin flooring training identified a clear preference for employers to access these types of training, particularly Specialist Up-skilling Programmes. Benefits identified include courses being free to employers and more accessible than college based training.



Providers in road working operations, land drilling and resin flooring also advised that they are looking into the possibility of expanding their training portfolio to include more Specialist Up-skilling Programmes to fill gaps which may exist (gaps in training provision are examined in more detail in Section 5.3.3).

“For operatives and craft technical [the most popular courses] its Specialist Up-skilling Programmes as they are free at the moment. For supervisors it will be the SUP as well as we're also hoping we'll be able to provide that for free like the Level 2. For management we are looking into developing a Level 4 or Level 6 programme as there is a gap at present.” **Road Working Operations Training Provider**

A land drilling provider noted its plans to increase up-skilling training and a resin flooring provider suggested up-skilling courses present better career progression opportunities, particularly for apprentices.

Training providers were also asked whether they currently make use of or link into the National Specialist Accredited Centre (NSAC) and if so, how likely they are to continue doing so in future with the following saying they currently work with the NSAC:

- Land Drilling; Resin Flooring; Woodworking; Drilling and Sawing; Render and Cladding; Demolition; Road Working Operations; Stonemasonry.

Reasons training providers gave for using the centre included NSAC providing internal verification for providers' qualifications, on-going liaison to discuss training needs within the relevant sector, to access funding for specific NVQs and QCF provision and for assessment services. Of the training providers that confirmed they work with NSAC, only those in land drilling and stonemasonry said they may not continue doing so in future, with the level of funding available being the key factor in their decision. Providers in the remaining sectors said they would continue working with and using NSAC in their current capacity.

Finally, employers were asked to rate various sources of training based on how well they help develop the skills needed by their business (on a scale of 1-10, where 1 is not well at all and 10 is extremely well).

The most popular methods of training (internal formal and informal) are also the highest rated (Table 17) and private training providers are also rated relatively highly across the sectors. Trade Associations and Federations may be encouraged by these results as these organisations are included in the 'private training providers' category. Stonemasonry and tunnelling employers return by far the lowest average (mean) ratings for this source of training.



Table 17 Average employer ratings for sources of training provision

Sector	Colleges	Private training providers	Conferences or seminars	Online distance learning	Internal formal	Internal informal
Overall	5.9	7.4	5.7	4.8	7.9	8.5
Building and Remedial Treatments	5.7	7.5	6.4	5.7	8.7	8.9
Concrete	5.0	7.1	4.0	3.2	8.2	8.4
Civil Engineering	6.6	8.0	6.3	4.8	8.2	8.3
Demolition	4.9	7.6	5.4	4.7	7.8	8.4
Drilling and Sawing	7.0	8.1	7.1	2.0	8.4	8.3
Fitted Interiors	4.9	7.2	5.4	4.4	7.3	7.6
Land Drilling	6.3	7.6	6.8	8.8	7.8	8.5
Passive Fire Protection	4.0	7.8	6.0	6.8	8.4	8.5
Render and Cladding	7.0	7.8	6.4	6.7	8.3	8.3
Resin Flooring	4.6	7.0	4.1	3.1	6.7	8.4
Road Working Operations	3.9	7.2	3.7	3.0	8.5	9.0
Roofing	6.1	7.3	6.1	5.1	7.8	8.6
Shopfitting	7.7	8.0	7.0	6.4	7.8	8.1
Stonemasonry	6.0	5.9	5.6	3.9	6.6	8.9
Timber Frame Erection	6.1	7.2	5.6	3.8	7.8	8.6
Tunnelling	6.5	6.1	5.8	5.4	8.0	8.8
Woodworking	6.3	7.0	5.9	4.9	7.8	8.4

Base = 3,554 responses

By contrast, relatively low ratings are provided for college training across the specialist sector. Only employers in drilling and sawing render and cladding and shopfitting record average (mean) ratings above 7 out of 10.

5.3.2 Meeting current and future skills requirements

“Whatever we haven't got, we will develop it if our members demand it.”

Trade Association

“If someone asks for something specific we can offer it and if we don't we can create it. We try to meet expected needs. We try to react quickly for our members.” **Trade Association**

Trade Associations and Federations interviewed were on the whole very positive about the extent to which existing training provision develops the skills and knowledge needed by employers both now and in the future.

Representatives also cited their work in responding to employers needs by seeking to develop and/or provide new types of training which are demanded in their sectors. This positivity was also reflected in the training provider interviews. All providers noted that from their experiences of dealing with employers, they feel the training they provide meets



employers' skills and knowledge needs extremely well. Providers said the provision they offer meets all the skills deficiencies and gaps identified by employers in Section 5.2.2. They also said they work closely with employers to ensure their provision continues to be closely matched to their future skills and knowledge needs. Of the training providers interviewed, nine (approximately 43%) are Trade Associations/Federations in the relevant sectors.

“We will design all our training in line with what the sector requires.”

Road Working Operations Training provider

“We're asking what employers need, in order to enable us to tailor future training.” **Concrete Training Provider**

This perception of pro-activeness is supported by the fact that only providers in roofing and shopfitting said they would not be expanding their portfolios in the next 12-24 months. Providers in the building and remedial treatments, concrete and woodworking sectors also currently perceive demand for training to be relatively high. These providers suggested they are experiencing demand for training, which exceeds what they can supply at present.

For the concrete sector, the provider interviewed notes that this relates to temporary works training for general operatives and specifically relating to concrete shuttering skills. For woodworking, the training provider interviewed advised that demand is currently extremely high for woodworking machinery based training. Also, a building and remedial treatments provider noted that they were recently required to provide additional courses to meet demand for technician and surveyor training. For the latter, this type of training could potentially help meet the employer identified skills deficiency in using chemicals and pesticides (see Section 5.2.2).

5.3.3 Gaps in training provision

Providers also identified a small number of gaps in the training they currently offer. These are presented in Table 18 below. Information relating to the grade/level of employee to which the gap refers is included where this information was provided.

It is important to note that these gaps refer to specific training organisations and are not representative of training providers across these sectors. The scope of this work has not included identifying whether this provision currently exists from alternative training providers based within the UK.

Table 18 presents details of skills gaps identified by employers; this includes skills gaps relating to skills employers need but cannot easily access through existing training provision (Column 3), and skills gaps and deficiencies which currently exist within their businesses (Column 4).

Results for the skills employers need, but cannot currently access through existing training provision should be treated as indicative rather than absolute or representative of the entire



specialist sector, as very low numbers of responses were received across the sectors. For clarity, the number of responses received for each skill is included in brackets in this table (Column 3, Table 18).

Although the number of responses received is too low to make representations for the entire specialist sector or its occupations. Regarding drilling and sawing, stonemasonry and woodworking the specific skills employers suggest they need, but cannot access through existing training provision align, to some extent, to the gaps in training provision identified by providers in these sectors (Table 18).

In addition, for some of the sectors, the specific skills employers say they need, but cannot access through existing training provision align, again to some extent, to the skills deficiencies and gaps which employers say currently exist in their businesses, as presented in the final column in Table 18.

It is possible, therefore, that a lack of specialist provision which develops specific skills may be causing skills deficiencies and gaps for employers. Findings for building and remedial treatments, passive fire protection and render and cladding support this view, as employers in these sectors identified a lack of suitable specialist skills training courses as the primary cause of their skills gaps (see Section 5.2.3).

Further in-depth research into specialist sector provision is required to quantify exactly what is available in each sector and to what extent any gaps in provision are causing skills gaps amongst employers. While evidence provided by the relevant Trade Association for tunnelling, for example, confirms that the newly developed Apprenticeship meets the need identified for spraying concrete skills, it is not clear whether the gaps in training provision or skills gaps identified by employers in other sectors are catered for by other training providers not consulted during this research (see Section 7).



Table 18 Skills gaps and gaps in training provision

Sector	Gap in Training Providers' Existing Provision	Skills Employers Require/Cannot Access Through Training	Employers' Skills Deficiencies/Gaps
Building and Remedial Treatments	-	Identifying and treating Japanese knotweed (3)	Using chemicals and pesticides
Concrete	Formal accredited training for concrete awareness and formwork systems for General Operatives; Presentation and Management Skills for Site Managers; Environmental Management for Site Managers (if demand was high enough to offer).	Plant training (including driving HGVs) (2)	-
Civil Engineering	-	Practical skills (5 – asphalt surfacing, road tow chipping, engineering skills, operating paving machinery and scaffolding)	Asphalt surfacing Operation of plant/heavy machinery
Demolition	-	Asbestos awareness (2)	-
Drilling and Sawing	Working with Plant (development of training underway)	Operating machinery (2 – laying mastic, using demolition diggers and tracksaws)	Operating machinery
Fitted Interiors	Customer service, management and sales training for Supervisors	Metalworking (1)	-
Land Drilling	-	General and advanced drilling skills (3)	Drilling skills
Passive Fire Protection	-	Fibre spraying (1)	Product knowledge Fibre spraying
Render and Cladding	-	All areas of rendering including lightweight and polymer systems (5)	Rendering and plastering skills Spray rendering
Resin Flooring	Supervisory and Management online learning modules	Non-manufacturer resin flooring training (to develop practical skills) (5)	-



Table 18 continued

Sector	Gap in Training Providers' Existing Provision	Skills Employers Require/Cannot Access Through Training	Employers' Skills Deficiencies/Gaps
Road Working Operations	Qualification at Level 4/5 for Contract Managers	Practical skills (7 – asphalt surfacing, road re-texturing, rubber removal, planing, road sweeper driving, road markings, road paving driving)	Skilled pavers
Roofing	-	Practical roofing skills (4 – slating, rubber, single ply, liquid)	-
Shopfitting	-	Product knowledge, IT skills (1)	3D Computer-Aided Design (CAD)
Stonemasonry	Stonemasonry repair for General Operatives; Additional routes for the Site Technical Support NVQ including drawing, estimating, tendering, planning, surveying and design coordination.	Quarrying, restoration (1)	1. General building skills 2. Banker work 3. CAD 4. Restoration skills 5. Carving stone
Timber Frame Erection	Working with Plant (development of training underway) Health, safety and environmental awareness training	Carpentry skills (3)	
Tunnelling	Standardised supervisory and management training recognised by all companies in the sector	Spraying concrete (4)	Spraying concrete
Woodworking	Bench joinery provision for General Operatives	Practical skills (8 – polishing, drawing, woodworking, metalwork, laminating products, CNC, wood machining)	Practical/hand skills Geometry skills Sash window manufacture and installation



5.3.4 Most important skills to develop in future

Training providers were also asked to provide, based on their experiences of working closely with employers, details of the skills and knowledge which they believe will be needed most by employers in the short, medium and long term. Providers interviewed found it extremely difficult to look ahead to the medium and long term, due to the many factors which could impact on the economic make-up and skills base of each sector. As such, providers were more confident about the responses provided for the short term. Therefore only results for the short term are presented in Table 19.

Providers identify practical specialist construction skills and technical knowledge as the skills employers will need most in the future in eight of the seventeen sectors (building and remedial treatments, concrete, land drilling, render and cladding, roofing, shopfitting, timber frame, tunnelling).

Seven of the remaining nine sectors identify a range of generic skills, with health and safety and keeping up-to-date with new regulations and legislation highlighted as particularly important. These results correlate to earlier findings in Section 5.1 which highlighted the high importance employers place on both specialist construction and generic skills and in Section 5.2.3, which identified understanding new legislation as the key priority skill for the sector. No information was provided for civil engineering and passive fire protection.



Table 19 Provider perceptions of the skills and knowledge employers will need most in the short term

Sector	Most Important Skills (Short-Term; 2012-2014)
Building and Remedial Treatments	Recovery of flood damaged buildings.
Civil Engineering	No information provided
Concrete	Temporary Works Site operatives in placing, identifying, finishing concrete.
Demolition	Plant CSCS cards
Drilling and Sawing	Keeping up-to-date with legislation.
Fitted Interiors	Sales Training, health and safety and knowledge of/compliance with changing regulations.
Land Drilling	Specific areas of drilling e.g. geothermal, geotechnical Investigation, drilling rock anchors.
Passive Fire Protection	No information provided
Render and Cladding	External rendering, management, financial management and health and safety. Products and techniques relating to the Green Deal and insulation.
Resin Flooring	Health and safety, contract management, sustainability/recycling, employment law.
Road Working Operations	Multi-skilling. Ensure a fully qualified workforce.
Roofing	Practical skills including new areas such as rain screening.
Shopfitting	CAD.
Stonemasonry	Health and Safety
Timber Frame	Health and safety awareness. P.M.T.S. for crane operators.
Tunnelling	Spraying concrete
Woodworking	Health and safety for machinery operators.

Employers, like training providers, also found it difficult to make medium and long term predictions when asked to identify the types of training which will be most important to their business in the short, medium and long term. While some individual employers cited specific skills relating to their sectors, the majority of responses received can be categorised according to the following areas, (listed in order of the number of responses received, highest to lowest):

- Health and safety training;
- Keeping up-to-date with new legislation/regulations;
- Providing relevant NVQs;
- Developing practical sector specific skills;
- Developing IT skills;
- Developing sector specific technical knowledge;
- Developing management skills;
- Providing/obtaining CSCS cards.



With the exception of providing health and safety training, NVQs and CSCS cards these findings correlate to the key skill areas identified in Section 5.1.1 and highlight the importance of improving all the key skill areas in future (see Section 5.1.2).

5.3.5 Issues and barriers to training

To conclude the assessment of specialist training provision, this section of the report examines the barriers faced by providers when seeking to provide training.

Data relating to specific training issues are also presented where these resulted from the Trade Association/Federation and employer interviews.

Barriers to providing training

The main barrier identified by providers is cost. The specific problems vary by sector and include:

- The costs of equipment being too high (building and remedial treatments)
- Significant expense to provide training within the UK but outside England (resin flooring);
- Difficulties experienced in securing funding to deliver training (timber frame erection);
- High costs associated with setting up a new training programme when it is unknown whether demand will ensure it is economically viable (concrete);
- Employers seeking to shortcut training and make money out of Government funded programmes (road working operations);
- Limited funding available for training over 25 year olds when most recruits are over this age (tunnelling).

Other barriers to training identified by providers include:

- Difficult to convince employers to release employees from the workplace to attend training (road working operations and drilling and sawing);
- Access to construction sites cannot always be obtained therefore training must be simulated (demolition);
- A lack of demand for training and a lack of knowledge amongst employers of the training they need for regulatory compliance (roofing);
- A sector characterised by self-employed sub-contractors which does not fit traditional training models (fitted interiors);
- Difficulties sourcing suitable tutors (woodworking);
- Lack of action from the relevant Trade Association/Federation to drive training (land drilling; however as the relevant Trade Association/Federation did not take part in the initial interviews it was not possible to follow-up on this at this stage).



In terms of overcoming these barriers, training providers appreciate that requesting more funding is a simpler solution to suggest than achieve. This aside, a possible solution which CITB and Trade Associations/Federations may be able to assist with, include increasing marketing efforts to raise awareness of the training available and required in the sector.

Reducing bureaucracy and administrative requirements relating to providing training is also cited as a possible solution by one training provider. Although this is outside the remit of CITB and more suited to regulators such as Ofqual, reducing the amount of time it takes to process CITB grants for training is a linked area and one which is seen to have potentially negative impacts on employers' cash flow. As such, this is seen as a contributing factor in discouraging employers from training other employees.

It is recognised that CITB cannot review the grants processing system based on the testimony of a single training provider, however this evidence may be useful, if seeking to investigate the performance of this area in future research.

Training issues

Trade Association/Federation and employer interviews point towards some specific issues around specialist training provision.

5.3.6 Apprenticeships

Apprenticeships have long been heralded as the key form of training for employers in the construction industry, with the ability to meet the dual aims of developing the skills and knowledge employers require now while building a highly skilled workforce for the future. However, survey results show that of the employers who train their specialists via Apprenticeships, only 7.5% started more than 10 specialists on Apprenticeship programmes in 2012.

Evidence from specific sectors provides some possible reasons why Apprenticeships may not be favoured by employers seeking to train specialist staff.

For example, in the road surface treatment segment of the road working operations sector, one Trade Association representative explained that the seasonal nature of the industry's work limits the amount of time employers are willing to spend on training. Shorter courses at specific times of the year are preferred to Apprenticeships:

“[Employers prefer] short courses and they prefer to do them in January to March before the season really starts again. That's the core industry.”

In the drilling and sawing sector one industry representative interviewed suggested an 'only what is necessary' approach to training exists amongst some employers, with companies only providing training when they feel it is a necessity, for example to comply with legislative requirements. It is unlikely employers with this viewpoint will engage with longer duration training programme such as Apprenticeships.



Similarly, in the passive fire protection sector, a representative interviewed advised that employers simply do not take on young recruits, which has left the Apprenticeship scheme developed for the sector in a dormant state. This sector appears to be moving away from the Apprenticeship model of training and towards short course delivery methods with a new training programme being considered with support from the Trade Association and led by a Steering Group of employers with support provided by the CITB Growth Fund. It will include a fire resistant coatings element which should provide coverage of the fibre spraying skills gap identified by employers in the employer survey. The provider confirmed the training will also provide coverage of the product knowledge skills identified as a deficiency by employers.

While the evidence above suggests the Apprenticeship model may not be the most appropriate type of training for these specific sectors, contrasting information from the building and remedial treatments and timber frame erection sectors suggests the only problems around Apprenticeships are that none currently exist.

As identified in Section 5.2.3, a lack of specialist training courses is the primary cause of skills gaps reported for building and remedial treatments. A respondent from an organisation representing the industry supported this view by advising that there is currently no career path for new entrants to the sector, the effects of which are evident in the skills levels of new recruits:

“Appalling, non-existent, success rate was less than 1 in 6 for example over 6 months, attitude and willingness to learn is terrible, sign of the times but a career path would show them the point of it all, that there is a well-paid career at the end of it.”

Though Apprenticeships are not explicitly mentioned, of the types of training examined in this research and available to construction employers, Apprenticeships are the closest match to what this stakeholder suggests is needed here. Similarly, in the timber frame erection sector, another industry representative interviewed stated:

“The courses available are not specific enough to the needs of erectors – they are too generic which is one of the reasons we want to have an Apprenticeship available. We want operatives on-site to be specifically trained in materials being used for the sector rather than just carpentry and joinery.”

Finally, in the tunnelling sector, although an Apprenticeship has been developed to meet skills gaps identified and help replace the ageing workforce, the Trade Association interviewed indicated that the contract based nature of the industry could pose problems for employers when needing to provide an apprentice with employment for eighteen months. The respondent identified Shared Apprenticeships as a possible solution to this issue:



“You might have work for the next few months but in 6 months’ time there’s nothing. We’re looking into making the Apprenticeship available as a Shared Apprenticeship as that should help with that problem.”

5.3.7 Fully Qualified Workforce

In the road surface treatment segment of the road working operations sector a training provider advised that ensuring a fully qualified workforce, and not any specific type of training, is the most important training requirement for employers in the sector in the short, medium and long term:

“The most important thing over the short, medium and long term is to up-skill and ensure the workforce is qualified as having a fully qualified workforce is a requirement of the Sector Schemes.”

Evidence provided above regarding apprenticeships for the building and remedial treatments sector also supports the importance of a fully qualified workforce, with a lack of clear career paths perceived to be damaging the skills levels of new recruits. When asked if there is any training they require that is not currently available, one building and remedial treatments employer highlighted a need for recognised qualifications in specific areas, saying:

“Recognised damp proofing, timber treatment and water proofing qualifications”

Similarly, in resin flooring, five employers (8% of the survey sample) identified the need for non-manufacturer delivered resin flooring training. This would develop practical skills, ideally in a formal training environment such as a college.



6. Driving Future Growth

This section of the report examines employers' predictions of future turnover and employment growth. Its primary focus is on answering one of the key research questions – Which specialist sector(s) will drive future growth in the specialist sector?

To answer this question fully requires consideration of some of the many economic and social factors which influence a sector's growth. While these factors are outside the scope of this research and likely more relevant to CITB's current feasibility study on specialist skills econometric modelling, the data gathered here identifies those sectors most optimistic about their future growth potential. This also allows examination of the issues which may affect the most optimistic sectors in the future. Finally, the section summarises the challenges the specialist sector will face as perceived by Trade Associations/Federations and employers.

It is important to note that employers found it difficult to provide growth predictions for the medium and long term, based on the uncertainty currently evident within the construction industry due to the on-going economic downturn. Short term predictions for the next 12 to 24 months were much easier to provide, therefore these results may be considered to be the most accurate for each specialist sector.

6.1 Predicted Future Turnover Growth

Employers were asked how they expected their turnover to change in the short, medium and long term and their predictions/forecasts are shown in Figures 13-15.

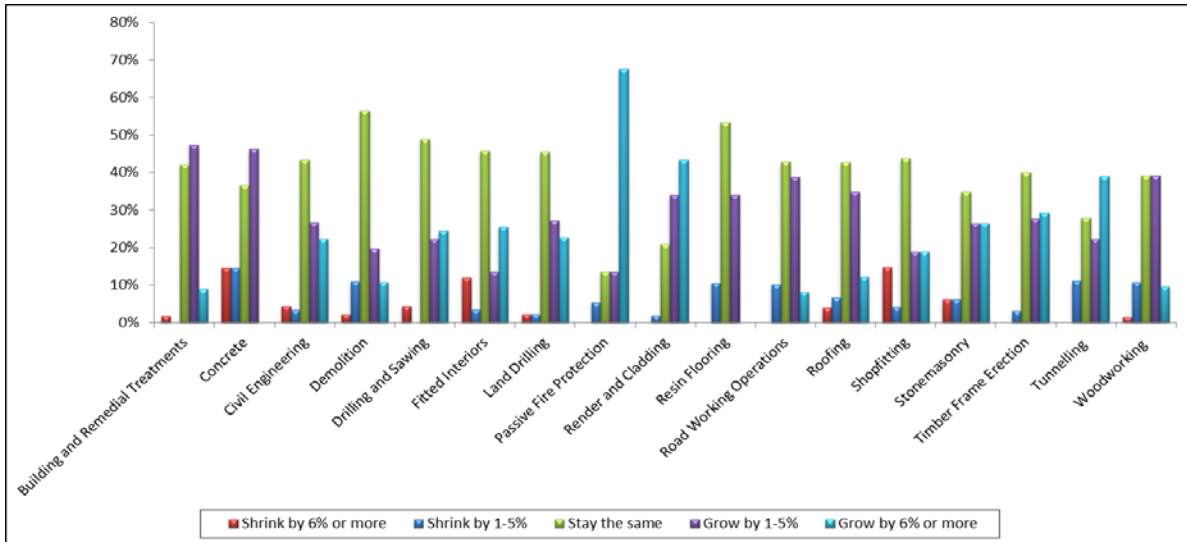
Short Term (2012-2014)

At least 13.5% of employers in all sectors expect their turnover to grow by at least 1% to 5% in the next two years, but in 12 of the 17 sectors the greatest proportion of employers predict their turnover will remain the same (Figure 13).

Employers in passive fire protection, render and cladding, and tunnelling are most optimistic about increasing their turnover growth in the short term, with at least 39.0% of employers predicting turnover will grow by 6% or more in the next two years. Negative growth is evident in all 17 sectors, with the highest incidences are in the concrete, fitted interiors and shopfitting sectors, where between 11.9% and 14.7% of employers predict turnover will shrink by 6% or more in the next two years.



Figure 13 Employer predictions of future turnover growth – short term (2012-2014)



Base = 897 responses

Medium Term (2015-2019)

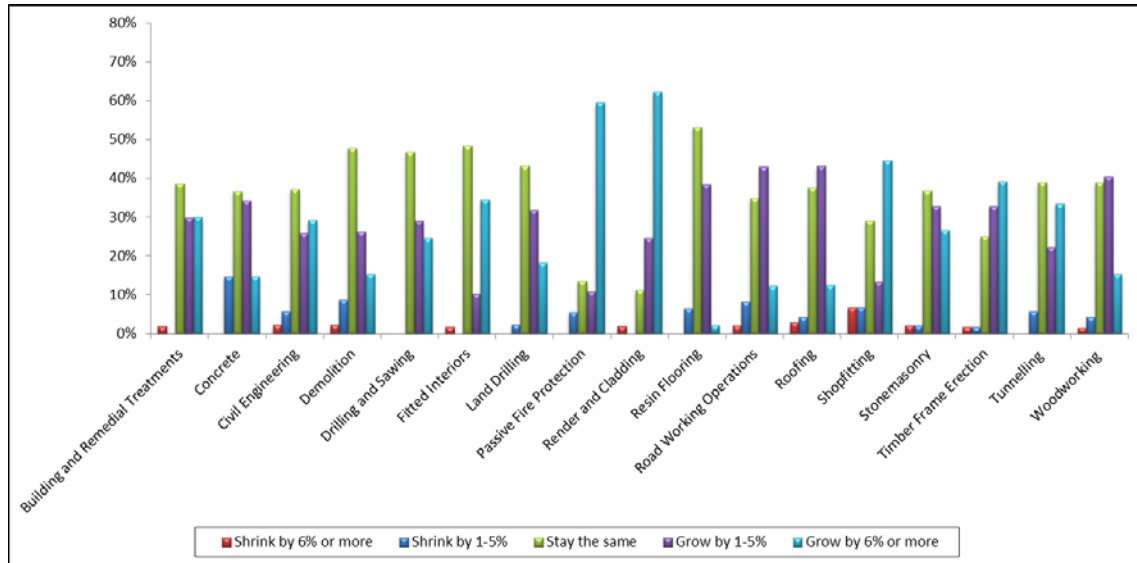
In the medium-term (Figure 14) the proportion of employers in all sectors predicting growth of at least 1% to 5% falls from 13.5% in the short-term to 10.3%. However in the most optimistic sectors, that is, render and cladding and passive fire protection, the proportion predicting turnover growth of at least 6% has risen from 39.0% in the short term to 59.4% in the medium term.

Other high levels of growth include at least 33.4% of employers in the fitted interiors, shopfitting, timber frame erection and tunnelling sectors predicting growth of 6% or more in the medium term. Results from the former two sectors echo the uncertainty currently evident in the construction industry, with employers reporting the highest incidences of negative growth in the short-term but some of the highest incidences of positive growth in the medium-term.

Overall, predicted growth exceeds predicted stability in seven out of the 17 sectors between 2015 and 2019 (passive fire protection, render and cladding, road working operations, roofing, shopfitting, timber frame erection and woodworking).



Figure 14 Employer predictions of future turnover growth – medium term (2015-2019)



Base = 886 responses

Long Term (2020 onwards)

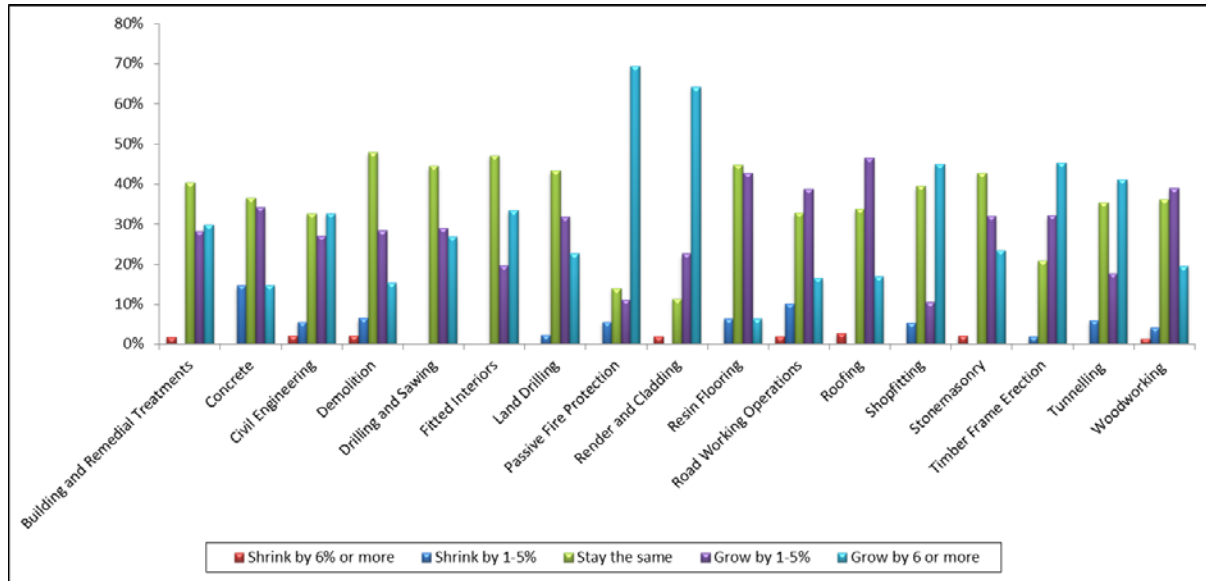
Turnover growth is predicted in all 17 sectors in the long term (Figure 15), with as for the medium- term prediction at least 10% of employers in all sectors predict growth of at least 1% to 5% from 2019 onwards.

Employers in the render and cladding and passive fire protection sectors are most optimistic in their predictions of turnover growth in the long- term, continuing a trend first evidenced in the short term forecast. At least 64.2% of employers in these sectors predict annual turnover will grow by 6% or more from 2020 onwards. It is not known whether employers predicting growth of between 1% and 5% across these time periods believe their growth will be at the higher or lower end of this scale, however it is possible to surmise from these results that for the majority of sectors, employer growth predictions correlate to those by Trade Association/Federations in Section 3 of:

Timeframe	Growth
Short term (2012-2014)	0%-1%
Medium term (2015-2019)	1%-2%
Long term (2020+)	2%-5%



Figure 15 Employer predictions of future turnover growth – long term (2020 onwards)



Base = 856 responses

6.2 Predicted Future Employment Growth

Employers were also asked to estimate how many specialist employees they expect to recruit in the short, medium and long term.

From Table 20, civil engineering, passive fire protection and render and cladding are most optimistic about their future levels of employment growth. For the latter two in particular, this correlates with employers' predictions of future turnover growth. Employers in timber frame erection appear to be the most optimistic about growth, but civil engineering, fitted interiors, roofing and shopfitting are also predicting growth of over 10%. Average growth in these specialist sectors as a whole is predicted at only just over 2% in the long term.



Table 20 Average number of specialist employees which the surveyed employers expect to recruit in future

Sector	Short term – 2012-2014	Medium term – 2015-2019	Long term – 2020 onwards	Total	Total Growth as a % of current employment
Building and Remedial Treatments	61	41	42	144	6.6%
Concrete	0	8	21	29	0.7%
Civil Engineering	280	822	1118	2220	11.5%
Demolition	38	53	59	150	5.6%
Drilling and Sawing	52	16	13	81	7.4%
Fitted Interiors	45	63	48	156	12.5%
Land Drilling	60	8	6	74	2.3%
Passive Fire Protection	208	272	332	812	0.7%
Render and Cladding	111	129	192	432	7.8%
Resin Flooring	18	14	29	61	6.1%
Road Working Operations	19	24	27	70	1.7%
Roofing	70	114	95	279	12.7%
Shopfitting	71	95	124	290	11.3%
Stonemasonry	25	13	13	51	6.4%
Timber Frame Erection	67	100	69	236	22.8%
tunnelling	102	44	65	211	0.2%
Woodworking	37	35	66	138	5.4%
Total	1264	1851	2319	5434	2.1%

Base = 2,133 responses

Note: Final column shows total growth as a proportion of total current employment for each sector.

6.3 Sectors Most Optimistic About Future Growth

From the data gathered it is not possible to determine which specialist sectors will drive future growth in the specialist sector. A wide range of economic and social factors unaccounted for in this research and, the effects of which are currently unknown, are likely to impact on the achievement of identified growth predictions.

While these factors are aligned to the current CITB *Modelling Specialist Skills* feasibility study on future econometric modelling research, the results within this study identify the sectors, which are most optimistic about their future growth, and based on findings from the skills gap analysis, any issues which may impact on these sectors in future.

Results presented in Sections 6.1 and 6.2 suggest the sectors most optimistic about their future growth (turnover and employment) are:

- Civil Engineering; Passive Fire Protection; Render and Cladding; Tunnelling.

For the latter two sectors in particular, this correlates closely to findings from the Trade



Association/Federation interviews, with these sectors identifying by far the most positive future economic outlook (see Section 3).

Tunnelling is perceived to be benefitting from a range of new large-scale infrastructure projects relating to rail, nuclear and sewerage works, while render and cladding is considered to be in prime position to take advantage of major Government initiatives relating to the energy efficiency agenda, for example external wall insulation activities as part of the Green Deal and Energy Company Obligations.

For civil engineering and passive fire protection, however, it is more difficult to explain the basis for these positive growth predictions. The Trade Association for the civil engineering sector predicted a period of stability and some time before significant growth will be achieved. The sector is by far the largest of those surveyed and it is possible the larger civil engineering businesses responding to the survey are the most optimistic about future growth. Civil engineering is also expected to play a leading role in future large-scale infrastructure projects, such as, High Speed 2 and predicted involvement in this type of potential contracts could be the basis for larger businesses' optimism.

Similarly, the Trade Association in the passive fire protection sector reported on-going difficulties resulting from a reduction in the amount of public sector construction spend. However, they also predict that government spending on building new schools and hospitals will increase from 2013 onwards. It is possible this prediction is the foundation for the positive growth predictions provided by employers, with the government's recent Budget announcement of an increase of £3 billion per year on infrastructure projects a potential pointer to the opportunities, which may present themselves to the specialist sector in future.

While these findings provide possible explanations for these positive future growth predictions, further in-depth research will be required with employers to identify the exact basis for these predictions.

The following sections present findings from the skills gap analysis which could potentially impact on the four sectors most optimistic about future growth.

6.3.1 Civil engineering

- Civil engineering is identified as the most likely to employ an ageing workforce (Section 4)
- The sector is identified as one of three most in need of developing skills relating to mentoring/on the job training/passing on specialist construction knowledge and skills (Section 5.1.2)
- Employers identified skills deficiencies and gaps relating to asphalt surfacing and the operation of plant and heavy machinery (Table 14, Section 5.2.2)
- Approximately 20.6% of employers suggest their skills gaps are caused by a lack of experienced staff or staff having been recently recruited (Section 5.2.3)
- The sector is one of four sectors with the highest proportions of hard-to-fill vacancies with these mainly caused by a lack of quality applicants and a lack of interest in the jobs available
- Colleges, conferences/seminars and online distance learning are rated no higher than



6.6 out of 10 by employers in terms of how well these sources of provision develop the skills employers need

- Employers identified a range of specific practical skills which are required, but which they perceive as being unable to access through existing training provision; asphalt surfacing, road tow chipping, engineering skills, operating paving machinery and scaffolding (Section 5.3.3).

6.3.2 Passive fire protection

- Employers identified skills deficiencies and gaps relating to product knowledge and fibre spraying (Table 14, Section 5.2.2). Fibre spraying was also identified by employers as a skill which they need but cannot currently access through existing training provision (Section 5.3.3);
- Employers report skills gaps being caused by problems with the supply of skills, specifically a lack of specialist training provision being available
- It is identified as one of the sectors most affected by skills gaps with an above average proportion of employers reporting losing business or orders to competitors, difficulties meeting quality standards and difficulties introducing new working practices as a result of skills gaps experienced
- Colleges, conferences/seminars and on-line distance learning are rated no higher than 6.8 out of 10 by employers in terms of how well these sources of provision develop the skills employers need, with colleges rated only 4.0 out of 10
- The Apprenticeship scheme is perceived to be dormant by the Trade Association with an assertion that businesses simply do not recruit young employees (Section 5.3.6).

6.3.3 Render and cladding

- Render and cladding is identified as one of three sectors most in need of developing practical specialist construction skills (Section 5.1.2), with employers rating these skills significantly below the overall sector average (Section 5.1.1) despite identifying them as amongst the most important in the sector (Section 5.1)
- Employers identified skills deficiencies and gaps relating to render and plastering skills and spray rendering (Table 14, Section 5.2.2). All areas of rendering were also highlighted by employers as skills they currently need but cannot access through existing training provision (Section 5.3.3)
- Employers report skills gaps being caused by problems with the supply of skills, specifically a lack of specialist training provision being available
- Render and cladding is identified as one of the sectors most affected by skills gaps with an above average proportion of employers reporting outsourcing work to sub-contractors and increasing workloads for other staff as a result of skills gaps experienced
- Training providers identify external rendering, management, financial management, health and safety and products and techniques relating to the Green Deal and insulation activities as the most important for rendering and cladding businesses to develop in the next two years (Section 5.3.4).

6.3.4 Tunnelling

- Tunnelling is identified as one of three sectors most in need of developing practical specialist construction skills and technical knowledge and generic skills including



management, communication, customer service and IT skills (Section 5.1.2)

- Employers identified a skills deficiency relating to spray concreting (Table 14, Section 5.2.2). This was also highlighted by employers as a skill they currently need but cannot access through existing training provision (Section 5.3.3)
- Tunnelling is also identified as one of the sectors most affected by skills gaps with an above average proportion of employers reporting skills gaps being caused by the businesses' inability to keep up with change
- Impacts of skills gaps are also above average in the tunnelling sector in terms of difficulties experienced by employers when aiming to meet quality standards
- Colleges, private training providers, conferences/seminars and online distance learning are rated no higher than 6.5 out of 10 by employers in terms of how well these sources' provision develops the skills employers need
- A tunnelling training provider identified a gap in existing training provision for standardised supervisory and management training which is recognised by all companies in the sector (Section 5.3.3).

The skills gap analysis has identified evidence to suggest some of these issues are already being addressed by those working within the relevant sectors. For example, in the passive fire protection sector intelligence gathered suggests two leading Trade Associations are working together to develop a new training programme, which aims to cover the skills deficiencies and gaps identified by employers in a format more suitable to the industry than the current Apprenticeship programme. Similarly for tunnelling, the recently launched Apprenticeship Frameworks aim to respond to the problems of an ageing workforce and the spray concrete skills gap.

Many of the other issues listed above are not addressed by findings from the skills gap analysis, but skills is the common denominator between these issues, with training strategies the most fit-for-purpose response to address these in future. The data presented in this report are not sufficiently detailed to provide CITB with a comprehensive evidence base to review and develop new training strategies for the specialist sector. However, they do provide a baseline for the 17 sectors examined as well as a starting point to guide further action towards the development of such strategies and the required actions are examined in more detail in Section 7 (Key Findings & Recommendations) for CITB and the industry partners.

6.4 Future Challenges

Trade Associations/Federations and employers were asked for their opinions on the biggest challenges faced by their specialist sectors in the short, medium and long term and the most popular responses for each time period from each group are:

	Trade Associations/Federations	Employers
Short-term: 2012-2014	Survival	Survival
Medium-term: 2015-2019	Meeting Demand	Survival
Long-term: 2020 onwards	Meeting Demand	Survival



The message is clear that survival is the key challenge businesses face across the specialists in this survey. Positive outlooks are evident (for example in render and cladding and tunnelling), however most employers see staying in business as their biggest challenge.

Responses provided by employers correlate with the issues identified by Trade Associations and Federations in Section 3, specifically in terms of the need to secure enough new work to remain in business and ensure sufficient cash flow.

In terms of meeting demand, Trade Associations/Federations are looking ahead to 2015 onwards when they hope businesses would be in a position to respond to improving economic conditions. The commonly held perception is that these will present further challenges for the sector such as needing to recruit new staff to fill positions made available as a result of any redundancies or ageing workers who have left the sector, and the need to up-skill the existing workforce to take advantage of new opportunities presented.

Trade Associations and Federations were keen to stress, however, that the medium and long- term challenges form a best case scenario which will only come to fruition if the short-term issues identified are solved and the economy moves into a recovery process.



7. Key Findings and Recommendations

This section of the report presents the key findings drawn from the research and which are combined with recommended actions for CITB, specialist sector Trade Associations and Federations and specialist employers to address the issues.

These are presented in two sections:

1. Overall key findings, with what this means to the key industry partners and required sectoral actions.
2. Key findings and required actions related to each of the 17 specialist sectors.

7.1 Key Findings

These are based upon the findings from the 17 sectors within this study, but combined as a single entity and can be applied to the specialist sector of the construction industry.

Businesses

- Estimated 83,244 companies in the overall specialist sectors in this study, with an estimated 466,754 specialist employees and 620,000 employees in the sectors as a whole undertaking non-specialist roles
- 75% of businesses have been established for more than 11 years, 89% trading for more than 6 years and only 3% founded since 2010
- Trade Associations and Federations and employers see survival as the key challenge for businesses now and in the future (2019 and beyond)
- Levels of growth upwards of 1% to 2% are not expected in most specialist sectors until 2014-2019 onwards, with the exceptions of render and cladding and tunnelling
- Approximately 69% of employers are aware of the low carbon agenda and initiatives such as the Green Deal.

Workforce Characteristics

- Specialist employees in this survey sample are slightly younger, and there is a slightly higher proportion of females and individuals from non-white ethnic backgrounds compared to the wider construction industry
- Very few vacancies within the surveyed specialist companies (average of less than 1 per business) and just over half of these are for specialist operatives
- 14% of vacancies are hard-to-fill and not filled mainly due to the quality of applicants and their lack of specialist skills, knowledge, relevant qualifications or attitude and motivation
- The most popular method of recruiting new employees is word of mouth
- Almost two-thirds of employers (60.6%) recruit specialist employees from within the construction industry, 33.3% recruited from school, college or University and only 6.1% recruited from non-construction sectors.

Skills

- More than one in four employers (27%) report having skills deficiencies and 11% report having skills gaps or shortages



- All key skills areas in the survey are in need of some future development, with the employers' key priority being to develop understanding of new legislation which impacts on their business
- Some sectors record below average ratings for skills which employers classify as amongst the most important for their business, such as, practical skills in render and cladding, woodworking technical knowledge and IT skills and communication skills in demolition and tunnelling
- Employers' rate their specialist employees' practical specialist skills and technical knowledge more highly than their generic skills, with the exception of management, customer service and team-working.

Training

- Main training issues identified in the report relate to Apprenticeships, ensuring there is a fully qualified workforce, supply of training and cost in delivering specialist training provision
- Trade Associations/Federations and training providers believe that, in general, existing training provision meets the skills needs of employers, but specific gaps may still exist
- Approximately 43% of training providers interviewed are Trade Associations/Federations
- Employers in building and remedial treatments, passive fire protection and render and cladding suggest they are experiencing negative impacts of skills gaps as a result of a lack of convenient or suitable specialist training courses
- Employers' decisions to train are mainly influenced by the extent to which training will help business needs, fill existing skills gaps, improve employees' skills and knowledge and meet regulatory or legislative requirements
- Employers favour shorter forms of in-company training, whether for very high or very low numbers of staff
- Employers identified the following as the most important aspects for them to develop in future:
 - Health and safety training
 - Keeping up-to-date with new legislation/regulations
 - Providing relevant NVQs
 - Developing practical sector specific skills
 - Developing IT skills
 - Developing sector specific technical knowledge
 - Developing management skills
 - Providing/obtaining CSCS cards.

7.1.1 What this Means for Key Industry Partners

CITB

1. This in-depth labour market intelligence on a pre-defined portion of the specialist sector of the construction industry provides an insight into the size of the specialist sector and its occupational areas, including the characteristics of businesses and employees working within these. CITB now has a baseline, which will inform future specialist sector research, such as econometric modelling, as well as a template for extending or replicating this pilot study to cover other specialist sectors.



2. A prediction of current and future growth has been established for the specialist sector over the next ten years, which aligns relatively closely to forecasts for the wider construction sector and the economy overall. It confirms that the specialist sector is fighting to recover from the economic recession, with pockets of positive growth predicted (and expected) in specific sectors. This information will help to plan future activities to support future growth predictions.
3. Evidence on the specific skills which need to be improved in specific sectors and issues relating to training can be addressed by collaboration between CITB and Trade Associations and Federations to benefit specific specialist activities and the sector overall.
4. More can be done by CITB and the individual Trade Associations and Federations to explore opportunities to increase recruitment of women and greater representation of individuals from non-white ethnic backgrounds in the specialist sector.

Specialist Trade Associations and Federations

1. The intelligence presented in this report provides Trade Associations and Federations in the specialist sector with a tool, which can be compared against their own Labour Market Intelligence and data. As employers who are not currently members of a Federation or Association have been interviewed, this provides a more complete picture of their specialist sectors and the prevalent key issues.
2. In many cases, information provided by Trade Association and Federation representatives correlates with that provided by specialist employers. However, the employer survey relating to skills deficiencies and gaps, priority skills areas and training issues provides information which Trade Associations and Federations may not currently be aware of.
3. This report can be used by these organisations to plan actions to address the identified issues and by working in partnership with CITB and employers.

Specialist Employers

1. This research provides employers with an up-to-date picture of the size and scope of the overall specialist sector and helps them to understand this and the current market conditions driving performance and key skills and training issues currently being experienced.
2. Although most employers will feel they already have an understanding of these issues, they have never before been part of a research study by CITB which considers their sector in this level of detail and this is seen as a key consideration for CITB, with potential for specialist employers to be significantly more engaged with CITB.
3. Employers need to undertake a review of their own activities, specifically to identify any areas of their business which could potentially be improved. Information relating to priority skills areas, skills deficiencies and gaps and potential opportunities all provide employers with starting points to assess whether their own companies can be advanced in any of these important areas.
4. A clear understanding of what CITB plans to do along with the industry partners regarding training and skills and business development and the employers' future engagement with this.



7.1.2 Required Actions

- CITB to present the findings of the research to the specialist sector and initiate specific sector work with the Trade Associations/Federations and their members to respond to the report findings and required actions
- CITB to consider replicating the research with some, or all, of the other specialist sectors not included in this study to establish a more complete evidence base to inform the refinement of an over-arching training and skills and business development strategy
- CITB and Trade Federations/Associations to review advice and support provided to new businesses in their first two years of existence and micro-businesses specifically pin-pointing how to respond to skills gaps and reduce any negative impacts these may create
- CITB and Trade Federations/Association to work together to improve Careers Information Advice and Guidance on the specialist occupations and career progression opportunities
- Trade Associations/Federations and CITB to work in partnership to increase recruitment of under-represented groups in the specialist sector, in particular women and those from non-white ethnic backgrounds
- The most important training and development areas identified by the employers for them to develop (Key Findings, Training, Page 77) need to be addressed by collaboration between CITB and the specialist Trade Federations and Associations and training providers
- CITB to review the specialist training provision available across the UK in each specialist sector and specifically how far this meets the skills deficiencies, gaps and training needs identified by employers
- New training provision should ideally be of short course duration and incorporate ways of increasing structured in-company training leading to a recognised vocational qualification to meet the employer's preferences
- Trade Associations and Federations in relevant sectors and CITB to establish, further methods of raising awareness of the opportunities presented by the low carbon agenda and the requirements for employers to access these.



7.2 Over-view and Actions for the Individual Sectors in this Research

Building and Remedial Treatments

Specialist Activity: Damp proofing and timber infestation solutions.

Current status of Sector: Most accurately described as mixed. Order books have shrunk and work is harder to obtain, but while some businesses have ceased trading due to the economic conditions, there remains enough work for the majority to survive. Regionally, the South of England is perceived to be performing most positively regarding quantity of work available and being undertaken, with London particularly buoyant. The South East and East of England are slightly behind London, but positive performance is evident. The North East, Scotland and the Midlands are three areas which have struggled to accrue sufficient orders in recent times and while it is believed that orders are now beginning to increase in the North East and Scotland, the Midlands region is earmarked as having very little new work.

Future Growth: Predictions provided with caution, with growth of 1-2% viewed as extremely positive over the short term (next two years), beyond this, growth in excess of 5% per year is required to yield performance levels similar to pre-2008 and before the onset of the economic recession.

Key Findings

- Employers are amongst the least aware of the low carbon agenda and initiatives
- Employers perceive skills gaps to exist due to a lack of specialist training provision.

Required Actions

1. CITB to work with the Trade Association to further develop a sector career pathway and promotional material (entry and progression routes, job roles, responsibilities and potential salary levels)
2. CITB to work with the Trade Association on recognised, accredited qualifications in specific specialist skill areas
3. Trade Association and CITB to increase awareness of opportunities related to the low carbon agenda
4. Trade Association and CITB to discuss methods for increasing employer awareness of available specialist training and investigate expanding current training provision accessible to employers.

Civil Engineering

Specialist Activity: Encompasses design and construction of infra-structure such as buildings, bridges, pipelines, dams, railways and roads.

Current status of Sector: Diverse in terms of company size, however whereas before the recession the largest companies would bid for the bigger contracts and the smallest would undertake the smaller jobs, companies of all sizes are now competing for the same work, which is mainly smaller contracts. This is placing pressure on the smallest companies as they are unable to reduce their costs to the same levels as the largest businesses. Only the South of England is classed as positive in terms of the amount of work being



undertaken. Little positive movement has been evident in the last 12 months and a period of stabilisation is now predicted. This follows a series of job losses approximately two years ago which were necessary for businesses to continue trading.

Future Growth: In Scotland numerous calls have been made to government to increase funding for Scottish infrastructure developments to kick start the industry, while in Wales a Civil Engineering Framework Agreement has been proposed to offer more opportunities for SMEs to provide works in the £0-£250,000 range. While little to no growth is expected in the short-term, the latter is potentially a positive move as businesses on existing framework agreements are perceived to be performing better than those that are not. In the medium term (2015-2019) some growth is predicted, but it is expected to be some time before any marked improvement is evident, aligning to large scale projects such as High Speed 2 which remain some way off incorporation.

Key Findings

- The sector is one of the most optimistic about future growth, however further research may be required to understand precisely the basis of this optimism
- It is the main sector whose workforce profile could be labelled as ageing
- One of the sectors with the highest proportions of hard-to-fill vacancies (the quality of applicants received and specifically their lack of skills and knowledge are almost exclusively the main reasons why vacancies are proving hard-to-fill).

Required Actions

1. CITB to consider further research with employers in the sector to understand the precise basis of their positive growth predictions including the sector being expected to play a leading role in future large-scale infrastructure projects (however it is not clear if this is the basis for predictions made by employers included in this research).

Concrete

Specialist Activity: In the context of this research the concrete sector includes businesses involved in structural concrete and concrete flooring activities.

Current status of Sector: The recession has had a huge impact on structural concrete businesses, with far fewer tenders available for new work across the UK. Regionally, the most affected areas are the Midlands and Scotland, with the former perceived as almost devoid of new orders at present. The amount of work undertaken in Scotland is also far lower than in recent years. The outlook for growth is similarly downcast, with none expected over the short to medium term. At present, the main aim of the structural concrete sector is for businesses to attract enough work to stay afloat.

Future Growth: The market is perceived to be stagnant at present. It is a smaller sector than most examined in this research, concerned with heavy construction and large companies competing for a small pool of work. The size of the sector makes it difficult to provide UK-wide insights into current performance, however the low amount of work available is perceived to be impacting on recruitment and therefore opportunities for future growth.

Key Findings

- Businesses are fighting to stay afloat in this sector as a result of a huge decrease in



new available orders.

Required Actions

1. CITB to discuss with the relevant Trade Associations/Federations any ways in which it can help support the push to keep businesses afloat in the sector, for example, through campaigning for funds for new works.
2. CITB may benefit from promoting the plant training provided by the National Construction College to concrete employers as this was identified as a specific skill employers need, but cannot access at present.

Demolition

Specialist Activity: Deconstruction of buildings and facilities by a wide variety of means.

Current status of Sector: Market conditions are described as challenging, with current projects being very demanding for employers both in terms of the price they are expected to provide and the time they are allotted to complete the works. Regionally there appears to be a North-South divide, with Southern companies benefitting from more available contracts than their Northern counterparts. Scotland is also identified as a struggling area. Businesses located in city centre locations are perceived to be the busiest at present.

Future Growth: None expected in the short term (2012-2014) however it is hoped the market will improve in the medium to long term (2014 onwards).

Key Findings

- Employers in the sector report significantly below average ratings for the communication skills of their specialist employees, despite indicating that this is extremely important for the safety of demolition operatives on site.

Required Actions

1. CITB to consider increasing promotion of its 'Asbestos Awareness UKATA Accredited' training course from the National Construction College to demolition employers as asbestos awareness was identified as a type of training employers need, but cannot access through existing training provision, especially as the short one to two day duration of the course would also appeal to employers.
2. Trade Associations/Federations may consider liaising with employers to advise of the training available which can help improve communication skills, which were rated significantly below average, despite being identified as some of the most important skills for operatives to have on site.

Drilling and sawing

Specialist Activity: Diamond drilling and diamond sawing activities mainly concerned with cutting construction materials, such as, concrete walls and floors, roadways, etc.

Current status of Sector: The marketplace is currently perceived to be lacking confidence, with orders being provided on a short contract basis, making it particularly difficult for businesses to plan for the future. No regional differences identified, however micro and the smallest small enterprises (0-9 and 10-12 employees) are perceived to be struggling the most in terms of securing new business.



Future Growth: Over the next 12 months little growth is predicted, however this is not unexpected as the 2008 recession drove 20% of the sector's operators out of business. In the longer-term growth is expected to increase as the number of staff steadily increases to pre-recession levels.

Key Findings

- Survey results appear to suggest the sector is one of the most affected by skills gaps. An above average proportion of employers report impacts of skills gaps, which could potentially threaten the existence of a business, including losing business to competitors, increasing operating costs and increasing workloads for other staff
- The highest proportions of employers report skills gaps caused by the business failing to recruit and train staff and recently recruited staff lacking experience
- A sector Association suggests an 'only what is necessary' approach to training exists amongst some employers, with companies only providing training when they feel it is a necessity, that is, to comply with legislative requirements.

Required Actions

1. CITB and the Trade Association to plan possible actions to respond to survey results which suggest the sector is one of the most affected by skills gaps and operates, in some quarters, an 'only what is necessary' approach to training. This may include increasing the promotion of the benefits of training to employers and examples of the training provision available, particularly shorter duration courses and those relating to operating machinery which employers say they need, but cannot currently access.

Fitted Interiors

Specialist Activity: In this context, includes businesses specialising in providing fit-out services to premises such as kitchens, bedrooms and bathrooms, with companies fitting offices and shops incorporated into the Shopfitting sector.

Current status of Sector: Since the onset of the recession in 2008, the sector has changed significantly, with the majority of work moving from providing new build services to refurbishment in recent years. The main challenge for businesses is to remain profitable while reducing margins to align to this change. The North East is the worst affected area in terms of the quantity of work being undertaken.

Future Growth: None expected in the short to medium term, with predictions suggesting significant growth will not be evident until 2019.

Key Findings

- Survey results appear to suggest the sector is one of the most affected by skills gaps. An above average proportion of employers report impacts of skills gaps including increasing workloads for other staff and delaying the development of new products or services
- The highest proportion of employers report skills gaps caused by businesses failing to recruit and train staff
- It is one of the sectors with the highest proportions of hard-to-fill vacancies, with the quality of applicants received and specifically their lack of skills and knowledge almost exclusively the main reasons why vacancies are proving hard-to-fill.

Required Actions

1. CITB and the Trade Association to plan possible actions to respond to survey results,



which suggest the sector is one of the most affected by skills gaps. This may include increasing promotion of the benefits of recruiting new employees particularly on training programmes such as Apprenticeships and developing existing staff via up-skilling courses or in-company training.

Land Drilling

Specialist Activity: Comprises businesses involved in the UK's ground drilling industry, covering activities such as mineral exploration, ground investigation, geo-technical processes and quarry drilling.

Current status of Sector: As an interview was not conducted with the relevant Trade Association for the land drilling sector (see Section 2.2), the most recent intelligence gathered is from 2010 and 2011, with 2010 perceived to be one of the toughest years on record and 2011 seeing no improvement and a potentially worsening situation characterised by increasing redundancies.

Future Growth: No predictions on this sector.

Key Findings

- Survey results appear to suggest the sector is one of the most affected by skills gaps. An above average proportion of employers report impacts of skills gaps, which could potentially threaten the existence of a business, including increasing operating costs, increasing workloads for other staff and outsourcing work to sub-contractors
- The highest proportion of employers report skills gaps caused by the business failing to recruit and train staff and a lack of experience in recently recruited staff.

Required Actions

1. In line with the recommendation for the fitted interiors sector, CITB and the Trade Association to consider possible actions to respond to results, which suggest the sector is one of the most affected by skills gaps. This may include increased promotion of the benefits of recruiting new employees particularly on specific training programmes such as Apprenticeships and developing existing staff via up-skilling courses or in-company training.

Passive Fire Protection

Specialist Activity: Comprises businesses involved in the installation and manufacture of specialist fire protection products and services designed to prevent the spread of smoke and fire and present in most modern structures (for example, fire seals, fire stopping products, piping insulation and specialist fire protective coatings).

Current status of Sector: The sector is grappling with a reduction in the amount of public sector work being undertaken, particularly the building of new hospitals and schools. New build construction has also reduced dramatically across the rest of the UK, with only London offering passive fire protection companies lucrative levels of work. Companies in other parts of the UK are currently diversifying into refurbishment and extension work in a not dissimilar situation to the fitted interiors sector.



Future Growth: Predictions for the sector are more positive than most, as there is a clear expectation that government will have to fund the building of new hospitals and schools from 2013 onwards.

Key Findings

- The sector is one of the most optimistic about future growth, however further research may be required to understand exactly the basis of this optimism
- Employers report an above average proportion of specialists aged 55 and over, while the relevant sector Trade Association suggests businesses simply do not recruit young people
- Survey results appear to suggest the sector is one of the most affected by skills gaps. An above average proportion of employers report impacts of skills gaps including losing business to competitors, difficulties meeting quality standards and difficulties introducing new working practices
- This has the highest proportion of employers who identified skills gaps caused by a lack of specialist training provision for the sector.

Required Actions

1. CITB to liaise with the Trade Association and training provider to develop new training for the sector to ensure the skills deficiencies and gaps identified are covered.
2. CITB to consider further research with employers in the sector to understand the precise basis of their positive growth predictions.

Render and Cladding

Specialist Activity: Encompasses specialist construction companies providing external wall protection and insulation solutions.

Current status of Sector: Portrays one of the most positive outlooks of the 17 sectors in this research. The market is buoyant in a number of regions, with significant social housing contracts requiring external wall insulation in the North East and Yorkshire and Humberside, while the introduction of the Green Deal is expected to increase orders significantly across the UK.

Future Growth: Although no specific targets were provided, it is predicted that the sector is ideally placed to exploit initiatives such as the Green Deal and government energy efficiency and carbon reduction targets, with potential access to significant funding streams set aside to aid home-owners wishing to have external wall insulation installed.

Key Findings

- The sector is one of the most optimistic about future growth, with perceptions suggesting it is extremely well placed to benefit from opportunities presented by the low carbon agenda and initiatives, such as, the Green Deal
- Employers rate the practical specialist construction skills of their specialist employees significantly below average for the specialist sector, despite citing a range of practical installation skills as amongst the most important for external wall insulation activities
- One of the sectors most affected by skills gaps, with causes of this reported by employers including a lack of available specialist training provision, and above average proportions of employers report the impact of this as needing to outsource work to sub-contractors and increasing the workloads of other staff.

Required Actions



1. CITB with the Trade Association to review training to determine if this develops the practical specialist construction skills render and cladding employers currently rate below average, meets the skills deficiencies and gaps identified by employers and provides access to opportunities presented by the Green Deal.
2. Where training courses are found to be lacking in any areas, CITB should discuss with the Trade Association any new specialist provision which may need to be developed or increasing promotion of current training programmes to sector employers.

Resin Flooring

Specialist Activity: Contractors, manufacturers and distributors of flooring finishes. The vast majority of interviews in this research were with resin flooring specialists, a small number of interviews were also conducted with specialists involved in providing other types of flooring finish such as carpet, wood, laminate and vinyl.

Current status of Sector: The relevant Trade Association for the resin flooring sector perceives market conditions to be improving of late, with refurbishment projects providing a significant proportion of new orders and not dissimilar to that faced by the fitted interiors and passive fire protection sectors. Orders from new build construction have slowed down, particularly from new hospitals and schools, however there is increased demand from businesses that are required by official regulations to install and maintain resin flooring. For example food manufacturers and suppliers are required by law to install floors which are made of impervious materials¹⁸. Regionally there is more new work in England and Wales than Scotland and Northern Ireland.

Future Growth: Overall, the amount of orders available is perceived to be steady but not substantial, therefore significant growth is not expected until new building of schools, hospitals and leisure centres begins, something the sector does not expect to happen for at least four years. Cash-flow presents another issue as smaller businesses in particular report extended payment terms and difficulties obtaining money owed from larger contractors.

Key Findings

- The sector reports one of the highest proportions of hard-to-fill vacancies, with the quality of applicants received and specifically their lack of skills and knowledge cited as the main reasons why vacancies are proving hard-to-fill
- Approximately 8% of employers identified a training gap, which could be filled by providing non-manufacturer delivered resin flooring training to develop practical skills, ideally in a formal training environment.

Required Actions

1. CITB and the Trade Association to discuss the possibility of developing specialist practical skills training delivered in a formal training environment. A need for this type of training has been identified by employers who are not content with the manufacturer-based training currently available.

¹⁸ Food Standards Agency, Food Hygiene, A Guide for Businesses, 2006



Road Working Operations

Specialist Activity: Combines the activities of road safety marking, road surface treatment and road planing specialists.

Current status of Sector: The recession has not had a huge impact on the volume of work undertaken in the Road Safety Marking sector, but profit margins have deteriorated in light of the reduction in available public funding for work and the fact that all clients are public sector based. Public transport budgets have been cut by around 20% in 2012 and this figure is expected to be repeated in 2013. Across all UK nations the market is considered the same, with Scotland perhaps the worst affected in terms of deteriorating margins.

For road surface treatment businesses the current market outlook is relatively positive. Cutbacks on public spending have conversely assisted the sector. Local authorities with tightening budgets are keen to identify cheaper ways of working. Surface treatment offers one such way that is significantly cheaper than re-surfacing an entire road. England is the busiest of the home nations, with on-going works across the country. Wales is also relatively busy in terms of new orders, while Northern Ireland is a little less prominent at present. The situation in Scotland is unclear.

Current market conditions experienced by Road Planing specialists are much less positive. Financially 2012 has been a very poor year in terms of turnover accrued from work undertaken. Scotland is highlighted as an area which has been hit particularly hard in this respect. The situation across the UK is described as terminal.

Future Growth: No growth is expected in the Road Safety Marking sector in the next two years and based on current circumstances predictions beyond that time are not forthcoming. In terms of growth in the Road Surface Treatment sector, predictions suggest government will provide local authorities with larger transport budgets from 2014 onwards and this is when the sector expects growth to increase. Road Planing sector predictions suggest the industry is in danger of collapse if local and central government do not provide more funding for new works.

Key Findings

- Businesses in the road planning segment of the road working operations sector are struggling to stay afloat as a direct consequence of a reduction in new work available across the UK in the road surface treatment segment, the relevant Trade Association advised that ensuring fully qualified workforces is the most important thing for businesses to acquire in future.

Required Actions

1. CITB to discuss with the Trade Association in the road planing sector any ways to support the push to keep businesses afloat, for example through campaigning for funds for new works.
2. CITB to review arrangements for the 'Qualifying the Workforce' fund to identify whether the fund can help support the push to achieve a fully qualified workforce in the road surface treatments sector.



Roofing

Specialist Activity: Over 12 roofing disciplines which can individually be classed as specialist, but for the purposes of this research, roofing was defined as a single category to ensure representation of any businesses specialising in roofing activities. Trade Association and Federation interviews covered the sector as a whole and also provided insight into the single ply roofing specialism.

Current status of Sector: Overall, it is difficult to assess the roofing sector's recent economic performance, as each individual discipline has been affected differently by the recession. As an example, single ply roofing has suffered from cash-flow problems similar to those identified in the resin flooring industry, with a decrease in commercial, industrial and public building projects negatively impacting on the amount of work undertaken.

An over-arching view of the sector suggests there is enough new work available, however the marketplace is saturated with companies. This has led to extreme competition for new work, with the businesses struggling to compete also battling to stay afloat. Regionally, the South of England has most new work, with Scotland operating at what may be termed a 'normal' level. Northern Ireland has the least new orders of the UK nations.

Future Growth: Predictions are modest, with growth of 4% not expected until 2014 at the earliest. The Green Deal is highlighted as a potential opportunity for roofing contractors and growth resulting from this initiative may also align to these timeframes.

Key Findings

- Employers report an above average proportion of specialists aged 55 and over they are amongst the least aware of the low carbon agenda and initiatives such as the Green Deal, despite the opportunities these potentially present. The sector accounts for one of the highest proportions of hard-to-fill vacancies, due to the quality of applicants received for positions and specifically their lack of skills and knowledge.

Required Actions

1. CITB and the relevant Trade Associations/Federations to discuss possible approaches for increasing employers' awareness of the opportunities presented by the low carbon agenda and Green Deal and the requirements employers must meet to access these.

Shopfitting

Specialist Activity: Covers specialist contractors providing commercial interior fit-out services to shops, including retail outlets, financial services, leisure centres, hotels, restaurants and many more.

Current status of Sector: There are currently too many shopfitting contractors competing for too little work in the sector. This has led to a survival situation where businesses are working to stay afloat as opposed to being profitable. The biggest problem faced by shopfitting contractors across the UK is cash-flow based. Larger contractors are increasing their payment terms sometimes up to 120 days. This is driving some smaller sub-contractors out of business, as they cannot continue working without steady incoming



cash-flow.

Future Growth: A period of stabilisation is required to overcome the cash-flow issue, with government input in the form of new legislation one possible solution to prevent businesses implementing extended payment terms. As a result no growth is expected until at least 2015.

Key Findings

- IT skills and specifically those relating to the operation of CAD and CNC machinery are priority skills, which can be both increased in terms of supply and improvement. The sector is one where specialists are most in need of developing the priority skill area of understanding new legislation, which impacts on business.

Required Actions

1. CITB and the Trade Association to discuss methods of raising employer awareness of available CAD training and National Construction College training such as Leadership and Management and Building Information Modelling.
2. Support that might be provided to improve contracting arrangements currently negatively impacting on smaller shopfitting businesses.

Stonemasonry

Specialist Activity: The various disciplines of stonemasonry include banker masons based in workshops and fixer masons who install the components produced by banker masons and memorial masons who work on memorial masonry such as headstones.

Current status of Sector: No discernible pattern in terms of the type of stonemasonry work undertaken or the region businesses are located in to provide a general view of the current market conditions experienced by stonemasonry employers. Some businesses are having difficulty finding new work, while others are performing very well in this regard. It is noted that during difficult economic times there is less priority for instigating cleaning, repair and restoration works, however even this is contradicted by large scale projects such as at York Minister.

Future Growth: The next two years are expected to be static. It is very difficult to provide any further future predictions after this time period due to the polarisation of business in the sector.

Key Findings

- The sector is one in which specialists are most in need of developing the priority skill area of understanding new legislation which impacts on business. Survey results appear to suggest the sector is one of the most affected by skills gaps. An above average proportion of employers report impacts of skills gaps including increasing operating costs and outsourcing work to sub-contractors. The highest proportions of employers suggest skills gaps are caused by recently recruited staff having a lack of experience.

Required Actions

1. CITB and the Trade Federation to plan possible actions to respond to the survey results, which suggest the sector is one of the most affected by skills gaps.
2. CITB to consider possibility of further research with employers to understand the areas



of legislation in which they feel their knowledge is currently lacking and how best to address and improve this priority skill area.

Timber Frame Erection

Specialist Activity: Involved in the erection of timber frames, but manufacturers and suppliers of timber frames were not included in the research.

Current Status of Sector: The market is viewed as difficult at present. There are fewer new orders available and this is increasing competition, reducing quoted prices and subsequently reducing the quality of work undertaken. A particular driver of these difficulties has been the reduction in social housing development as timber frame is often used throughout these works. Despite around 70% of Scottish housing being timber frame, the market, in terms of the number of new timber frame projects, is much smaller than that of England, Wales and Northern Ireland, where in each around 17% of housing is currently timber frame. The best performance in terms of quantity of work currently being undertaken is in London and the South East.

Future Growth: Current difficulties prevented any specific growth predictions to be made, but some optimism exists in terms of the energy efficiency agenda and the potential opportunities this presents for timber frame erectors. However, government social housing policy is expected to be the main driver of future growth.

Key Findings

- Specialists are most in need of developing the priority skill area of understanding new legislation, which impacts on business
- Evidence gathered suggests there may be demand for specialist training programmes for timber frame erectors, separate to existing carpentry and joinery provision (Specialist Apprenticeship Programme and Specialist Up-skilling Programmes).

Required Actions

1. CITB and the Trade Association to continue development of specialised training programmes for timber frame erectors, separate to existing carpentry and joinery provision.
2. Explore collaborative efforts to provide up-to-date information on any new legislation which may impact on employers' working practices.
3. Investigate methods to raise awareness among employers of the opportunities presented by the low carbon agenda and Green Deal.

Tunnelling

Specialist Activity: Covers businesses involved in major infra-structure tunnelling activities.

Current status of Sector: Of all the sectors in this research, tunnelling reports, by some distance, the most positive market outlook. The sector is described as booming at present and in one of the best places it has ever been in terms of new orders. Railway works in London, the impending High Speed 2 project, sewerage works and nuclear commissioning are all underway and all require substantial tunnelling work. This is providing a significant



and long-lasting boost to tunnelling companies' order books. Regionally, most of this work is situated in England and specifically London however there are projects elsewhere, such as, nuclear works at Hinckley Point, on the East Coast and in Scarborough. Belfast experienced a similar boom two years ago however work has slowed in Northern Ireland of late, while Scotland is best described as having 'drip-feeds.'

Future Growth: It is difficult to place a figure on future growth, however approximately 2-3,000 new employees have been recruited into the sector in the last two years. This gives an idea of the scale of work being undertaken. This is also expected to continue and increase as new major projects such as those detailed above commence.

Key Findings

- The most optimistic of all sectors in terms of future growth, with significant expansion expected as a result of major infrastructure projects, such as, High Speed 2
- The sector reports an above average proportion of specialists aged 55 and over, with the relevant Trade Association confirming the workforce is ageing with few new entrants entering into employment
- Employers report significantly below average ratings for the communication skills of their specialist employees, despite indicating that communication is extremely important for the safety of operatives
- One of the sectors most affected by skills gaps with an above average proportion of employers reporting skills gaps being caused by the businesses' inability to keep up with change
- Employers and the relevant Trade Association identified a skills gap relating to spray concrete.

Required Actions

1. CITB, and the sector organisations involved in the tunnelling Apprenticeships to discuss the potential to develop the sprayed concrete Apprenticeship route as a Shared Apprenticeship and as an alternative short course.
2. CITB and the sector organisations and training provider involved in developing supervisory and management training for the sector to look at possible ways to facilitate discussions between tunnelling employers, with the aim of ensuring employers agree to recognise a single source of supervisory and management training for the sector.

Woodworking

Specialist Activity: Includes businesses specialising in woodworking and joinery related construction.

Current status of Sector: The market is described as patchy at present, and reliance upon house building has stymied any growth as there are very few new build projects being undertaken. The south of England is performing slightly better than the North in this respect however across the UK nations the picture is relatively similar. Larger companies that usually focus on new build activities are now moving into the retrofit market to make up for the shortfall in new build contracts. This is forcing extreme pressure on the prices quoted by smaller companies and not healthy for the sector, as only 3% is comprised of larger businesses.



Future Growth: Linked to the construction sector as a whole and in the short term (next two years), growth is expected to be very slow, with nothing over 1%-2% until the medium to long term (2014 onwards).

Key Findings

- Woodworking specialists' technical knowledge is rated significantly below average by employers, yet working to measurements and specifications is identified as one of the most important skills for specialist joiners
- Similarly the IT skills of woodworking specialists are also rated significantly below average, despite employers identifying operating computer assisted design (CAD) and computer numerically controlled machinery (CNC) as two of the most important skills for specialist joiners
- The sector is amongst the least aware of the low carbon agenda and initiatives.

Required Actions

1. CITB and the Trade Federation to discuss methods of raising employer awareness of CAD training.
2. CITB and the Trade Federation to discuss training which will improve specialists' practical skills and technical knowledge.
3. Raise awareness of the opportunities presented by the low carbon agenda and Green Deal and how to access these.

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