



# Skills Investment Plan

## For Scotland's construction sector

## Foreword



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Wherever you live in Scotland, you don't have to look far to see the transformative effect the construction sector is having on the country.

Current and recent headline projects ranging from the South Glasgow Hospitals Campus and the Queensferry Crossing, to the redevelopment of Marischal College in Aberdeen or the opening of Mareel in Shetland shows the impact the construction sector has on communities and infrastructure across Scotland.

At the same time, the sector is the lynchpin in fulfilling the demand for new and redeveloped housing stock around the country, with innovation being the key to success, from the development of increasingly energy-efficient homes to pioneering building techniques such as offsite construction.

Indeed, Scotland has a long and proud history of such innovation, from inventions like tar macadam to feats of civil engineering such as the Forth Bridge.

The newly-established Construction Scotland Innovation Centre will support the industry as it looks to continue this track record, but the ability to meet the demands of the future isn't something that should be taken for granted.

Ensuring that Scotland's construction sector remains at the forefront of the industry globally requires a concerted effort to maintain a constant stream of new talent.

Again, the sector has a proud story to tell in this respect. The use of apprenticeships has long-been well established and the sector is replete with stories of those who have carved out exciting and rewarding careers having entered via this route, myself included.

However, construction cannot rest on its laurels. Employers and businesses have weathered a huge storm in recent years as the economic downturn affected the construction industry to a greater and deeper extent than many other parts of the economy, with the sector shrinking in size as a result.

The upshot of this is that as we move into a more positive economic outlook, there is a greater need than ever for new skills and workforce development.

A failure to act now in a concerted manner will see the industry missing out on growth opportunities, with a series of recent reports from a number of different sector organisations making this point forcefully.

It is against this background that the Skills Investment Plan (SIP) for Scotland's construction sector is being launched.

Led by industry itself and developed through consultation with the full range of stakeholders including employers, industry bodies, trade associations, public sector agencies, universities, colleges and local authorities, it sets out a clear picture of the sector as it stands, the skills challenges it faces, the skills provision that currently exists and where the priorities lie for future action.

Skills Development Scotland (SDS) has acted as the facilitator throughout this process, but the extent to which the SIP fulfils its aims will primarily depend on the response of industry.

By engaging with the themes of the action plan, from attracting future talent and workforce development to modernising training and providing skills for future growth, employers and businesses have the potential through the SIP to help Scotland's construction sector become more innovative and dynamic.

More young people will view construction as an exciting career option, current industry professionals will see a wider range of career opportunities, and businesses will have the skills and flexibility they need to react to the changing economic landscape and to anticipate future demand.

The construction sector is already built into every fabric of our communities, and taking the right action now will bring benefits not only for those working within it, but for the nation as a whole.

# 1 Purpose of the Skills Investment Plan

The Skills Investment Plan (SIP) for Scotland's construction sector is an industry-led document developed by Skills Development Scotland (SDS) on behalf of the Scottish Government and the Scottish Construction Skills Advisory Group of Construction Scotland.

SDS will continue working with industry and public sector partners in its implementation.

The aim of the SIP is to:

- set out the characteristics of the construction sector in Scotland and its economic importance
- identify the key skills challenges currently facing the sector, as well as the wider challenges that will impact on the sector in the future

- build a clear picture of training and skills provision
- based on feedback from stakeholders and employers, identify the most important priorities to be taken forward in the action plan for the construction sector.

The development of this SIP has involved a review of industry publications and official data sources, consultations with stakeholders such as employers, industry bodies, trade associations, public sector agencies, universities, colleges and local authorities to understand the key issues facing the sector and its future skills needs.

The SIP aims to set out a clear and shared statement of the sector's skills needs and highlights the skills priorities to be addressed to support the sector's future growth ambitions. These are outlined within 'Building for the Future: Scotland's Construction Industry Strategy 2013-16, and associated industry strategies, and include increased competitiveness, efficiency and productivity; attracting and securing the future workforce and leaders; customer focus and high quality standards, and innovation. The SIP, through its key themes and action plan, provides a framework for aligning public and private sector investment in skills to address these ambitions.

Figure 1.1: SIP development process



*"The SIP provides a framework for aligning public and private sector investment in skills to address these ambitions."*

# 2

## Characteristics of the sector in Scotland

The construction sector is a major player in Scotland's economy, contributing £10bn in 2012 and employing approximately 178,400 people across Scotland in 2013.

The recent economic downturn and recession impacted the construction sector disproportionately, leading to a loss of people and skills in the sector, and significant changes in the scale and composition of the business base.

Much of the data gathered throughout the SIP process and described in this chapter chart these impacts, having been collected during this challenging economic period. More recent forecasts point towards improvements in sector performance, signalling opportunities for growth, yet also challenges for the sector to continue to build on this momentum, given the loss of skills and expertise.

In this section, we set out our definition of the sector and outline the key findings from the evidence base that formed the basis of our analysis and discussions with industry.

### Sector definition

As with many other sectors, reaching a universally accepted definition of the construction sector is challenging, given the interrelated nature of skills used in construction with many aspects of the supply chain and related sectors.

For the purposes of this SIP and to ensure consistency with other national research and statistics, the construction industry is assessed as including the following functions<sup>1</sup>.

The construction industry comprises:

- specialised construction (including building services engineering) activities
- construction of buildings
- architectural and engineering activities
- civil engineering
- manufacture of construction-related goods
- retail of construction-related goods.

Details are provided in the appendices.

### Employment profile<sup>2</sup>

**Employment and self-employment:** Employment in the construction sector counts for around 6.9% of total Scottish employment, with approximately 178,400<sup>3</sup> employed in the sector in 2013, a decline of 16% from the 2008 figure of 212,500<sup>4</sup>.

In addition, around 48,000 people were self-employed in the sector in 2014, a decline of 11% from 2008. However, self-employment increased as a proportion of total employment in the sector during the same period, from around 24% in 2008 to 27% in 2014<sup>5</sup>. This suggests that some workers may have been retained in the sector by moving into self-employment, but this does not account for all jobs lost.

### Location of employment:

The construction sector is represented in every local authority in Scotland, with the largest numbers of jobs in the central belt and north east. All but a small number of local authority areas saw construction job losses between 2008 and 2012.

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<sup>1</sup> For a full SIC and SOC breakdown see the reference tables in the appendices 1 and 2

<sup>2</sup> The employment profile is assessed in two ways (1) using data on employment in identified construction companies and (2) using occupational profiles which is assessed as all those in employment who work in a construction related job, regardless of its sector ie maintenance electricians in the retail sector

<sup>3</sup> This includes those in employment and self-employment

<sup>4</sup> Business Register and Employment Survey citations

<sup>5</sup> Annual Population Survey Workplace Analysis 2013

## 2 Characteristics of the sector in Scotland continued

In 2013, the largest numbers in employment in construction were found in Glasgow (21,700), North Lanarkshire (15,900), Aberdeenshire (13,300), Edinburgh (13,000) and Aberdeen (10,800). Employment dropped across all of these local authority areas since 2008, apart from Aberdeenshire and North Lanarkshire which saw an increase of 11% and 12.7% respectively.

Around 57% of jobs lost in the sector as a whole were in Glasgow, South Lanarkshire and Edinburgh.

Counter to the trend across the rest of the country, and Aberdeenshire and North Lanarkshire, as mentioned above, employment grew in the Shetland Islands from 1,100 to 1,700 (48.5%), and remained the same in Inverclyde and Orkney<sup>6</sup>.

**Construction sub-sector employment:** 'Specialised construction activities' is the largest sub-sector of the construction industry, employing around 80,300 people in 2013, and including skilled trades such as electrical installation, plumbing, heat and air conditioning installation, joinery installation and scaffold erection.

There were decreases in employment across all sub-sectors from 2008 to 2013, apart from 'architectural and engineering activities', which increased by 5.3%. The greatest proportionate decrease was seen in 'manufacture construction related goods', and 'civil engineering', both having seen falls in employment of 27%, see table 2.1.

**Construction occupational trends<sup>7</sup>:** In 2014 most people (around 85,200) were employed in skilled trades occupations, accounting for nearly 50% of people employed in the sector. Employment in skilled trades however fell by 27% from 2008 to 2014. The largest declines in employment across the occupational groupings were faced by 'process, plant and machine operatives' (39%) and 'associate professional & technical occupations'

(31%), followed by 'skilled trades occupations' (27%) as above.

Interestingly, if we consider the overall number of people who have construction-related jobs, it is relatively static over time, with a small decline of 2%<sup>8</sup>, suggesting that skilled workers have transferred to other sectors, deploying their skills elsewhere, for example retail or engineering.

### Workforce diversity:

In terms of the diversity of the workforce, the construction industry is largely white and male, with females accounting for 13% of the workforce and employed mostly in administrative and customer service roles.

Workers from an ethnic minority background account for 2.1% of the workforce, compared to 2.9% of total employment<sup>9</sup>. This is a significant increase from the previous year when ethnic minority representation was only 0.5%.

### Business base

There were around 26,800 construction businesses in 2014, accounting for 13.2% of the total number of businesses in Scotland. This is a small increase (2%) in the total number of businesses from the 2009 figure<sup>10</sup>.

### Sub-sector profile:

Businesses engaged in 'specialised construction activities' make up around half of the total number of construction businesses (12,535), with 'architectural and engineering activities' and 'construction of buildings' the next largest sub-sectors.

The extent to which the change in the number of businesses manifests across the sub-sectors varies greatly. The largest decrease was seen in 'construction of buildings' (-18%) and the smallest in 'specialised construction activities' (-1%).

Adding further complexity to this picture is an increase in the number of businesses in 'architectural and engineering activities' (58%) – suggesting fragmentation – and 'retail of construction related goods' (3%). See table 2.2.

Table 2.1: Construction employment by sub-sector 2008-2012

| Sub-sector                     | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | Change  | %    |
|--------------------------------|--------|--------|--------|--------|--------|--------|---------|------|
| Specialised construction       | 93,200 | 82,200 | 69,800 | 80,000 | 66,100 | 80,300 | -12,900 | -14% |
| Construction of buildings      | 48,300 | 40,500 | 42,500 | 40,200 | 36,900 | 37,300 | -11,000 | -23% |
| Architectural and engineering  | 24,400 | 25,900 | 23,600 | 23,100 | 22,000 | 25,700 | 1,300   | 5%   |
| Civil engineering              | 27,200 | 23,800 | 23,100 | 20,100 | 21,900 | 19,900 | -7,300  | -27% |
| Manufacture construction goods | 14,200 | 12,500 | 10,600 | 11,800 | 12,200 | 10,400 | -3,800  | -27% |
| Retail of construction goods   | 5,100  | 4,300  | 5,000  | 4,100  | 5,100  | 4,700  | -400    | -8%  |

Source: Business Register and Employment Survey

Table 2.2: Business base by sub-sector

| Sub-sector                     | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | Change | %    |
|--------------------------------|--------|--------|--------|--------|--------|--------|--------|------|
| Specialised construction       | 12,790 | 12,615 | 12,335 | 12,710 | 12,535 | 12,685 | -105   | -1%  |
| Architectural and engineering  | 4,460  | 4,560  | 4,685  | 5,140  | 5,515  | 7,050  | 2,590  | 58%  |
| Construction of buildings      | 5,420  | 5,000  | 4,765  | 4,750  | 4,375  | 4,420  | -1,000 | -18% |
| Civil engineering              | 1,550  | 1,490  | 1,395  | 1,345  | 1,365  | 1,425  | -125   | -8%  |
| Manufacture construction goods | 790    | 775    | 740    | 760    | 750    | 755    | -35    | -4%  |
| Retail of construction goods   | 455    | 455    | 455    | 450    | 465    | 470    | 15     | 3%   |
| Total                          | 25,465 | 24,895 | 24,375 | 25,155 | 25,005 | 26,801 | 10     | 2.0% |

Source: Office of National Statistics, The Inter-Departmental Business Register

<sup>6</sup> Business Register and Employment Survey

<sup>7</sup> Annual Population Survey

<sup>8</sup> Annual Population Survey

<sup>9</sup> Annual Population Survey

<sup>10</sup> Office of National Statistics, The Inter-Departmental business Register

## 2 Characteristics of the sector in Scotland continued

### Business size:

Businesses in the construction sector are largely micro in size (88%), with the largest numbers of micro businesses found in 'specialised construction activities' and 'architectural and engineering activities'.

Table 2.3 presents data on the size of businesses across the sub sectors.

### Geographic profile:

Construction businesses are located in the highest numbers in Glasgow (1,505), Highland, (1,425), Aberdeenshire (1,415) Lanarkshire (2,285) and Edinburgh (1,345). Together they account for 43% of total businesses in Scotland. Edinburgh and Lothians saw the greatest percentage decline (13%) in businesses, with a much smaller impact on business numbers in Aberdeen City and Shire (2%) during the period 2009 – 2014<sup>11</sup>.

### Sector output and GVA:

The construction industry output was £11.3bn in 2014, down 2% from £11.6bn in 2008. During this period there was a large decline in private construction (20%) and house building (27%), as would be expected during a period of recession.

The impact of this was offset by an increase in public construction (53%), infrastructure (35%) and repair and maintenance (5%)<sup>12</sup>.

Turnover in the sector is estimated at £24.3bn and GVA £10.2bn in 2012. In both cases we see decreases during the recession period of 4% and 14% respectively. In keeping with patterns in business base and employment, the largest decreases in GVA are concentrated in the central belt, and less so in the north<sup>13</sup>.

Table 2.3: Size of business 2014

| Sub-sector                                | Micro (0-9) | Small (10-49) | Medium (50 – 249) | Large (250+) |
|---|-------------|---------------|-------------------|--------------|
| Specialised construction activities       | 89%         | 9%            | 1%                | 0.1%         |
| Architectural and engineering activities  | 94%         | 5%            | 1%                | 0.1%         |
| Construction of buildings                 | 87%         | 11%           | 2%                | 0.3%         |
| Civil engineering                         | 76%         | 18%           | 6%                | 0.4%         |
| Manufacture of construction related goods | 69%         | 26%           | 4%                | 0.0%         |
| Retail of construction related goods      | 72%         | 27%           | 1%                | 0.0%         |
| Scotland total                            | 88%         | 10%           | 2%                | 0.1%         |

Source: Office of National Statistics

<sup>11</sup> Office of National Statistics

<sup>12</sup> Office of National Statistics

<sup>13</sup> Business Register and Employment Survey, Scottish Annual Business Statistics

# 3

## Skills demand

Our research, consultations and analysis point to demand for skills relating to potential employment growth and replacement demand, skills gaps and shortages, and the ability of the sector to respond to a number of drivers of change.

### Sector growth

Recent forecasts<sup>14</sup> suggest sector output to grow on average by 1.1% between 2015-2019. In terms of employment forecasts, there is only likely to be marginal growth of 0.1% per annum<sup>15</sup> which highlights that the overall scale of the sector will remain relatively static. However, within this, the sector is likely to be more dynamic with demand projected to be strongest in the professional occupational categories, ranging from average annual growth of 0.9% to 1.5%, but with many of the trades expected to see static or marginally declining levels of employment.

It is anticipated that replacement demand will be more significant than expansion demand in the coming years. The Construction Skills Network report forecasts an Annual Recruitment Rate (ARR) for the sector employment of 5,700 jobs per annum to 2019, 2.6% of total employment<sup>16</sup>.

Elements of the construction sector in Scotland have seen a significant amount of business coming through major public infrastructure projects such as the South Glasgow Hospitals Campus (due to conclude in early 2015), the Queensferry Crossing and M74 extension. These have been important to the sector in the face of a decline in house building and private building. In the coming years Scotland will see further infrastructure developments, such as; the dualling of the A9, a new hospital for Dumfries and Galloway, a new campus for City of Glasgow College and a new Bio Quarter for the University of Edinburgh. These infrastructure projects are important for the sector, and along with improvement in the housebuilding sector, are likely to act as a catalyst for jobs and business growth.

Repair and maintenance which accounts for around a third of the sector by value, is also likely to be a strong driver of sector activity and future demand for skills. The Scottish Housing Condition Survey 2013 (SHCS) highlighted that 78% of homes had disrepair and 58.5% had disrepair to critical elements (elements which make the property wind and watertight).

Output in the private housing sector is anticipated to increase 5.4% after years of decline, driven by a recovery in demand in the housing sector and a number of large regeneration projects with substantial housing elements. The City Deals in Glasgow and Aberdeen, and others to follow, will bring significant further investment in programmes of residential and infrastructure development and regeneration, with the potential to increase demand for skills across the sector in these areas.



<sup>14</sup> Construction Skills Network Report 2015 - 2019

<sup>15</sup> Ibid

<sup>16</sup> Ibid

# 3

## Skills demand continued

### Skills demand

Our industry consultation and a review of the findings of employer research<sup>17</sup> point to the following challenges in relation to skills demand:

- an increasing demand for professional occupations (e.g. managerial, business marketing) and management skills (e.g. planning, business development, HR, financial management)
- the focus on traditional apprenticeship routes into the industry may not fully reflect the increasing diversity of roles beyond traditional trades, meaning potential limitations to the entry and progression routes in the sector
- the micro and SME business base faces challenges in engaging with workforce development to enable innovation, competitiveness and sustainability – this is a long-standing problem as the workload of business proprietors can make them difficult to reach and engage with
- technical skills development and upskilling in line with developing practices and technology may drive demand for higher levels of qualification and experience
- across the industry there is a deficit in skills in information and communications technology (ICT), particularly in the case of sole traders/micro businesses that are yet to digitise their operations
- competition with other sectors for technical and professional level workers (e.g. engineering)
- areas of shortage in specific technical areas, including machine operatives

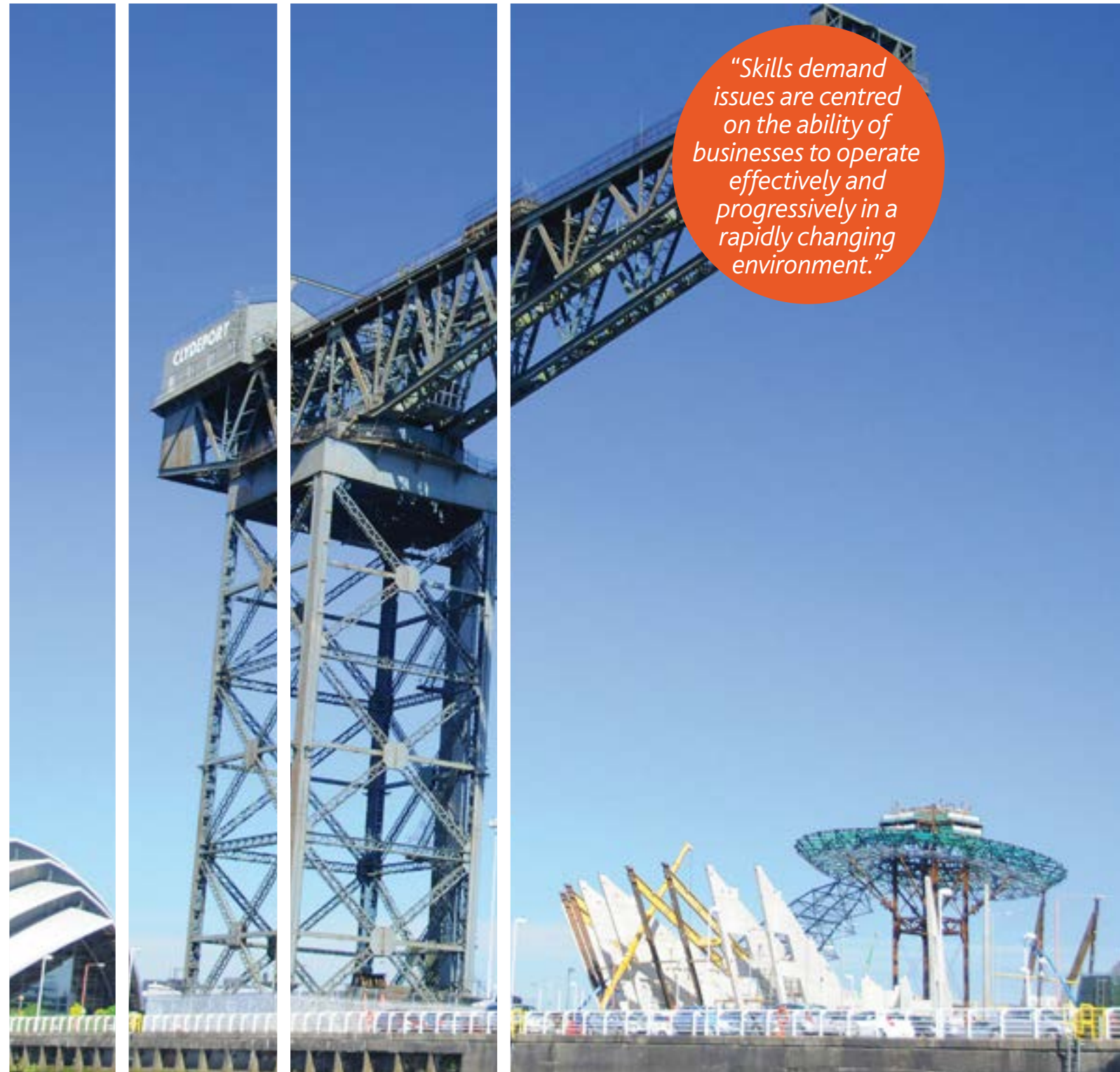
- continuing demand for stonemasonry and roofing to maintain Scotland's rich Built Heritage
- in common with the wider population, the construction workforce is ageing, with around 30% aged 50 or above meaning that the industry needs to prepare for significant numbers of the workforce retiring in coming years<sup>18</sup>.

Having faced considerable challenges during the downturn, the skills demand issues facing the construction industry are, broadly speaking, centred on the ability of businesses in the sector to operate effectively and progressively in a rapidly changing environment.

### Industry engagement in skills development

Whilst the industry will always need to maintain its base of core technical skills, the skills issues described above focus on business management, growing and innovating in business to retain a competitive advantage. The UKCES Employer Skills Survey (ESS) 2013 found that provision of any management training in the preceding 12 months was lower in construction than the cross-sector average, with 22% of those surveyed indicating participation in this training compared with the average of 35%.

As a sector, particularly within technical trades, there has been long-term industry commitment to apprenticeships as the main entry route and training methodology. There is high demand amongst prospective applicants for places on construction and related Modern Apprenticeships (MAs).



*“Skills demand issues are centred on the ability of businesses to operate effectively and progressively in a rapidly changing environment.”*

<sup>17</sup> UKCES ESS, CITB 2015 report, SummitSkills SSA  
<sup>18</sup> Annual Population Survey 2012



# 3

## Skills demand continued

Arguably, this well established and well recognised approach has put in place an effective infrastructure for development of technical skills on the job, with ongoing workforce development (including the development of soft skills and management skills) thereafter less well established. Parts of the industry pay a statutory levy that is used to support Modern Apprenticeships and grants to businesses in support of innovative practice and skills development, meaning that there will likely be some variation in the extent to which employers across the footprint are engaged in training and workforce development.

Planning for, and engagement with, longer term workforce development and succession planning was found to be lower than average in the construction sector in the UKCES Employer Skills Survey. Respondents from the sector were more likely than average to report that they neither offered training nor wider development opportunities (18%, compared to average of 11%).

Whilst these findings reflect the behaviour of the construction sector at UK level, the general trend supports the theme identified through the SIP process of a sector that has a strong focus on initial training through the MA programme, with less well-established approaches for ongoing workforce and management development.

There are MA frameworks available containing management and supervisory vocational qualifications (uptake of these is described in the next section). These may provide a basis for further development and promotion of management training in the sector.

These skills challenges are emphasised when considered in line with the drivers of change impacting on the industry and the anticipated skills implications summarised in table 3.1.

Table 3.1: Drivers of change

| Driver  | Explanation and anticipated impact  |
|---|---|
| <p>New technology and innovation. Including:</p> <ul style="list-style-type: none"> <li>• modern methods of construction</li> <li>• building information modelling</li> </ul> | <p>As is the general trend across sectors, the development of new technologies and approaches is a key driver of change in the sector, however, the sector does not invest significantly in research and development and innovation given the cost imperative in winning and delivering contracts. This may have a longer term impact on the capacity of the sector to develop and grow in relation to the opportunities presented by technological advances.</p> <p>Modern methods of construction require changes in skills and working practices across the range of occupations, particularly in terms of off-site manufacture of both building structures and services. Building Information Modelling (BIM) is increasingly being adopted by government and the wider public sector as a requirement of contracts. Engaging with this presents an upskilling challenge across the workforce, not just in terms of using the technology, but in terms of basic IT skills, management skills and customer services.</p> |
| Energy efficiency and the low carbon agenda   | <p>Scottish Government continues to set a challenging and ambitious low carbon agenda for Scotland that calls for all new buildings to be zero carbon, 'where practicable', by 2017. This aspiration impacts the breadth of the industry from source materials, to design, construction methods and buildings systems.</p> <p>There have been several campaigns and grants in recent years to support 'retrofitting' of existing properties with energy efficiency systems which the industry and education sector prepared for with 'top-up' training. Despite this, there has been low customer demand, creating a challenge for the industry in driving growth in this aspect of the market.</p> <p>New skills and techniques are needed to protect the integrity of high specification efficient buildings when it comes to fitting internal services.</p>  |
| Key market areas  | <p>In line with trends in the data, it is anticipated that 'repair and maintenance' and public sector contracts will continue to be important markets for the sector.</p> <p>Lifestyle changes and increases in the use of technology in the home will require new and high level skills for those fitting and integrating complex systems.</p>   |
| Public sector requirements  | <p>The Scottish Government review of procurement in construction was launched close to the time of writing, and it is anticipated that any outcomes of this will require continued focus on construction.</p> <p>Building Standards Certification established by the Scottish Government in The Building (Scotland) Act 2003, permits the construction of building work to be certified by trained and qualified professionals. These professionals are qualified to an agreed standard and can certify work requiring a Building Warrant as complying with Building Regulations without the need for detailed scrutiny or inspections by local authorities.</p>  |

# 4 Current provision

The volumes of learners engaged in education and training relating to the construction sector has decreased during the recession period as would be anticipated with the employment patterns described earlier.

Understanding the patterns of education and training provision for the construction sector is a core component of the SIP process. Entrants to the construction sector come predominantly through Modern Apprenticeships, followed by Further Education (FE) and Higher Education (HE).

Construction and related training requires significant investment from both employers and the education system in terms of time, facilities and skilled trainers. In recent years there have been several changes in the context of the education and skills system that will have a bearing on the SIP.

These include:

- regionalisation of colleges, the implementation of outcome agreements and a policy focus for colleges on supporting young people's employability and associated adjustments to funding methodologies
- an ongoing process to review MA contribution rates so that public investment is proportionate with cost of delivery, outcomes and economic impact.

The impacts of these changes will only become known over a longer timeframe. There is a challenge, however, for the education and skills system and industry to sustain investment in construction training, and in the infrastructure this requires. This is necessary to secure the talent pipeline and to develop new approaches to workforce development that enable the longer-term sustainability and competitiveness of the sector.

Further detail on the levels of education and training provision being delivered relating to the sector is presented below.

This description of the public provision on offer shows high volumes being delivered across MAs, Further and Higher Education. However, there is limited information available on the outcomes and impacts of all aspects of this provision, with this intelligence mostly relating to Modern Apprenticeships.

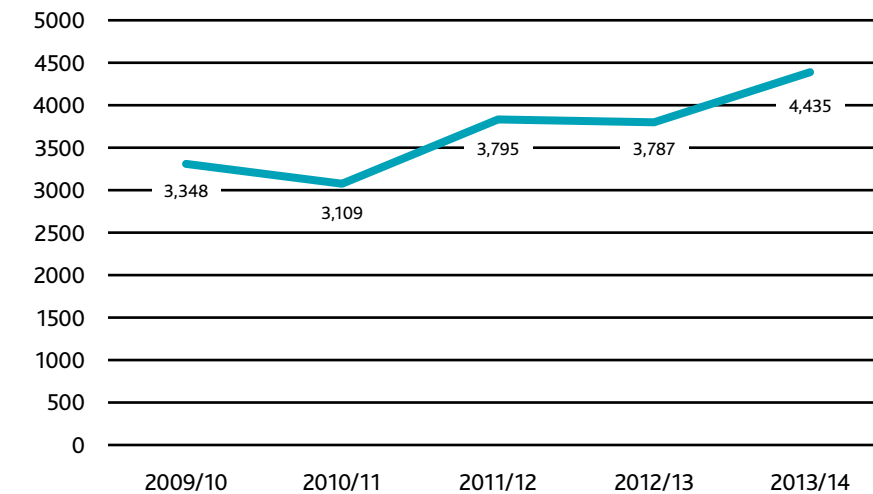
### Modern Apprenticeships

The patterns described below indicate that there has been growth in both the number of starts and in the overall achievement rate between 2009 and 2014, yet a decrease in numbers 'in training' in construction and related frameworks<sup>19</sup>, as may be expected during a time of decline in employment in the sector.

There were 4,435 MA starts for construction and related frameworks in 2013/14. Over the period from 2009/10 these dipped slightly during the recession, increasing between financial years 2011/12 and 2013/14, with a total increase of 32% (see figure 4.1).

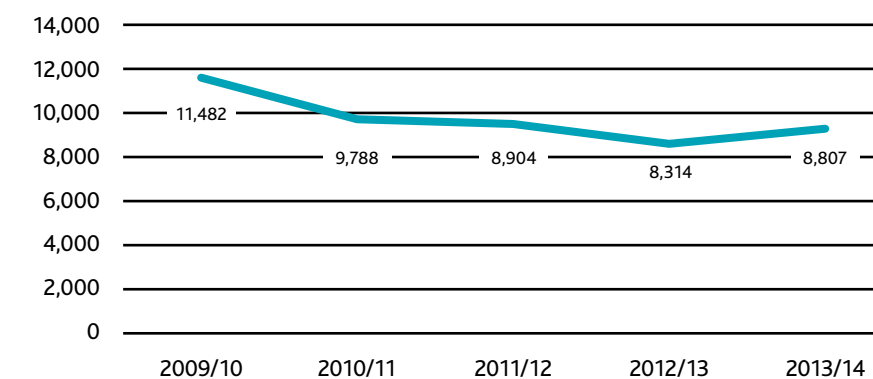
There were 8,807 MAs in training in construction and related frameworks in 2013/14, 23% fewer compared with 2009/10 (see figure 4.2). This may indicate redundancies of apprentices during the recession. There appears to be the beginning of an upward trend in in-training figures between 2012/13 and 2013/14 suggesting a degree of stability.

Figure 4.1: MA Starts in construction & related frameworks



Source: SDS Corporate Training System

Figure 4.2: MAs in training in construction & related frameworks



Source: SDS Corporate Training System

<sup>19</sup> Frameworks include Construction, Construction (Civil Engineering & Specialist Sector), Construction (Craft Operations), Construction (Technical), Construction: Building, Construction: Civil Engineering, Construction: Professional Apprenticeship, Construction: Specialist, Construction: Technical Apprenticeship, Electrical Installation, Electrotechnical, Electrotechnical Services, Extractive and Mineral Processing, Gas Industry, Glass Industry Operations, Heating, Ventilation, Air Conditioning and Refrigeration, Plumbing, Water Industry

# 4

## Current provision continued

Further analysis upon the publication of 2014/15 figures is needed to ascertain if this is the beginning of an upward trend.

The MA achievement rate increased from 69% to 77% between 2009/10 and 2013/14 and is currently in line with the achievement rate of other framework groupings.

There were 637 starts on construction related frameworks containing management and supervisory vocational qualifications in 2013/14, an increase of around 42% since 2009/10, and making up 14% of all construction starts. The achievement rate in 2013/14 was 94%, pointing to increasing strong interest and success rates of the programme.

The proportion of females in construction and related frameworks has increased slightly over time, from 1.6% in 2009/10 to 2% in 2013/14, however, it remains amongst the most gender segregated framework groupings, as might be expected with the gender profile of the wider workforce described earlier.

As would be expected by the concentration of businesses being in the central belt and north of Scotland, the largest numbers of MAs are employed in those same areas, indicating that the allocation of MA places is broadly in line with the business base. Industry feedback suggests that the majority of MAs are being offered by small and medium sized businesses, with micro and large businesses less engaged.

A factor that will have an effect on participation in the MA programme is the training levy applicable to certain aspects of the broader construction footprint. This variation means that businesses will have a different sense of cost depending on their involvement with the levy or otherwise.

Modern Apprenticeships are well established in the construction sector for technical trades; however interest is growing in expanding the MA approach into higher level skills as a means of addressing skills needs at those levels.

The foundation of all MA frameworks are National Occupational Standards (NOS). With the long history and commitment to apprenticeships, the development and use of NOS is well established across the sub-sectors. Industry bodies were keen to emphasise the importance of NOS and their longer term maintenance to development of fit-for-purpose qualifications and training provision during our consultations.

### Further and Higher Education

Scotland's colleges provide a significant amount of training in the construction sector – during 2013/14, there were around 23,000 students on construction related courses (see table 4.1). Of these, 63% were studying at FE level which experienced a bigger overall decrease (35%) in student numbers compared to HE (20%).

With regards to FE, the most popular courses were General Construction; Building/Construction Operations; and Building Services. The biggest decrease was in construction site work and general construction and the biggest increase was in construction management.

In addition to FE, the HE sector provides a range of undergraduate and postgraduate construction-related courses, mainly around the professions such as architecture, engineering and planning (see table 4.2).

There has been a general decline in HE enrolment similar to the FE sector and also a continuing low level of female students.

Table 4.1: Number of FE Students on construction related courses 2008/09 to 2013/14

| Subjects                           | 2009/10       | 2010/11       | 2011/12       | 2012/13       | 2013/14       | %           |
|------------------------------------|---------------|---------------|---------------|---------------|---------------|-------------|
| Surveying/Planning/ Development    | 122           | 105           | 111           | 92            | 80            | -27%        |
| Built Environment (general)        | 1,298         | 1,355         | 1,173         | 854           | 765           | -39%        |
| Building Design/Architecture       | 332           | 238           | 332           | 332           | 307           | -7%         |
| Construction (general)             | 11,455        | 9,759         | 8,230         | 7,132         | 6,716         | -44%        |
| Construction Management            | 208           | 206           | 212           | 350           | 322           | 56%         |
| Building/Construction Operations   | 4,442         | 4,036         | 3,886         | 3,619         | 3,020         | -29%        |
| Building Services                  | 3,063         | 2,459         | 2,225         | 2,039         | 2,170         | -25%        |
| Interior Design/Fitting/Decoration | 786           | 646           | 659           | 652           | 553           | -27%        |
| Construction Site Work             | 472           | 595           | 503           | 363           | 199           | -56%        |
| Civil Engineering                  | 767           | 636           | 556           | 502           | 509           | -32%        |
| Structural Engineering             | 56            | 44            | 36            | 43            | 44            | -20%        |
| <b>Totals</b>                      | <b>23,001</b> | <b>20,079</b> | <b>17,923</b> | <b>15,978</b> | <b>14,685</b> | <b>-35%</b> |

Source: Scottish Funding Council Infact Database

Table 4.2: Number of HE students on construction-related courses 2008/09 to 2013/14

| Subjects                                  | 2009/10       | 2010/11       | 2011/12      | 2012/13      | 2013/14      | %           |
|---|---------------|---------------|--------------|--------------|--------------|-------------|
| Civil engineering                         | 3770          | 3905          | 3835         | 3545         | 3420         | -9%         |
| Architecture                              | 3060          | 2925          | 2605         | 2665         | 2610         | -15%        |
| Building                                  | 2875          | 2595          | 2195         | 1665         | 1685         | -41%        |
| Landscape & garden design                 | 160           | 170           | 175          | 170          | 180          | 13%         |
| Planning (urban, rural & regional)        | 885           | 845           | 800          | 640          | 690          | -22%        |
| Others in architecture, building planning | 90            | 110           | 105          | 110          | 90           | 0%          |
| BBP in architecture, building planning    | 0             | 0             | 0            | 10           | 5            | n/a         |
| <b>Totals</b>                             | <b>10,840</b> | <b>10,550</b> | <b>9,715</b> | <b>8,795</b> | <b>8,675</b> | <b>-20%</b> |

Source: Higher Education Statistics Agency

# 4

Current provision continued

## Industry/academic linkages

The Scottish Funding Council, in conjunction with Construction Scotland has recently launched an innovation centre for construction. The Construction Scotland Innovation Centre (CSIC) is supported by Scottish Funding Council, Scottish Enterprise, Highlands and Islands Enterprise and 11 Scottish university partners.

It aims to bring together industry, academic and public sector partnerships to deliver change in business culture and economic impact in the construction industry through facilitating partnerships that support business, product, process and service innovation.

The CSIC business plan proposes the development of skills and training through a Construction Academy. This Academy will enable greater awareness of industry needs among the student body and facilitate the effective transfer of academic research outcomes via future employees. Activities in this category will seek to instill multi-factor, multi-discipline working skills in students from Scottish university, college and apprenticeship programmes in order to maintain synergy with the rapidly changing knowledge and skills requirements of the industry.



# 5 Key challenges and priorities

For the construction sector to continue to strengthen following the damage caused by the recession there are challenges for industry and the education and skills system that arise from this work.

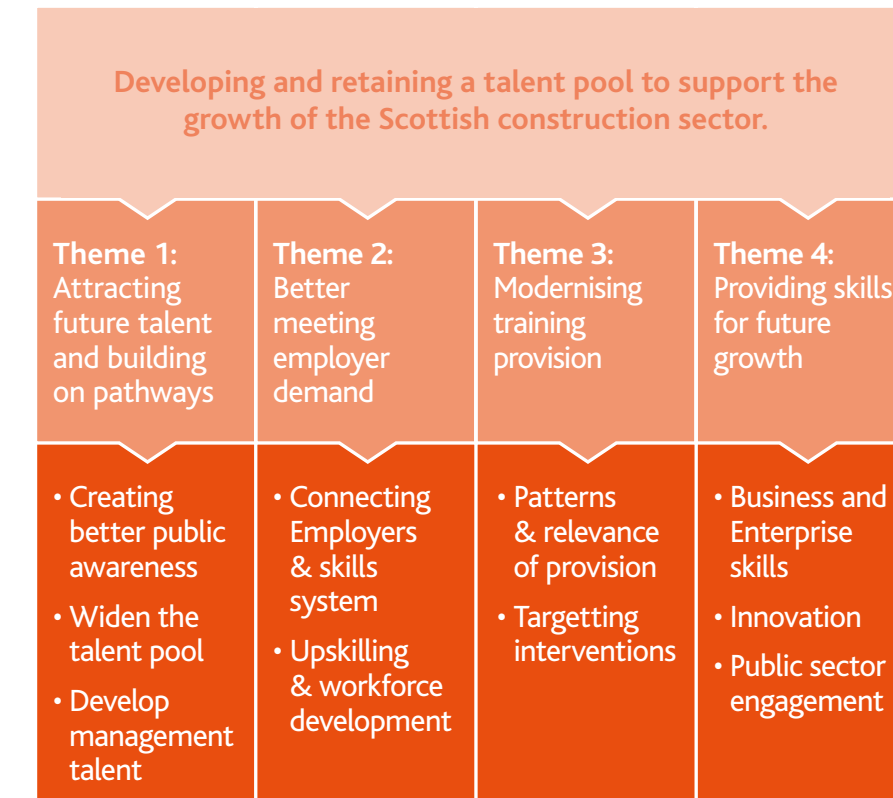
In summary, these sit across a number of fronts with the sector navigating the need to:

- maintain the established core technical skills at the heart of its trades and professions
- build higher level skills that are reflective of the increasing technical complexity of 21st century construction
- engage with innovation across the building process and build capacity to exploit this to retain competitive advantage
- develop management capability that supports business sustainability across the long term, both in terms of business development, and people development and planning
- increase the flexibility of the current and future workforce and businesses to be adaptive to sudden changes in the economy.

As described earlier, the above factors sit within a context of a high micro and small business base that is spread across Scotland. The challenge for industry and the education and skills system in working together to support the future growth of the sector requires a multi-faceted and flexible approach, aligned to a common strategy. The following themes set out the strategy and framework for such an approach.

These have been developed and tested with industry representatives and form the basis of the action plan presented later in the document.

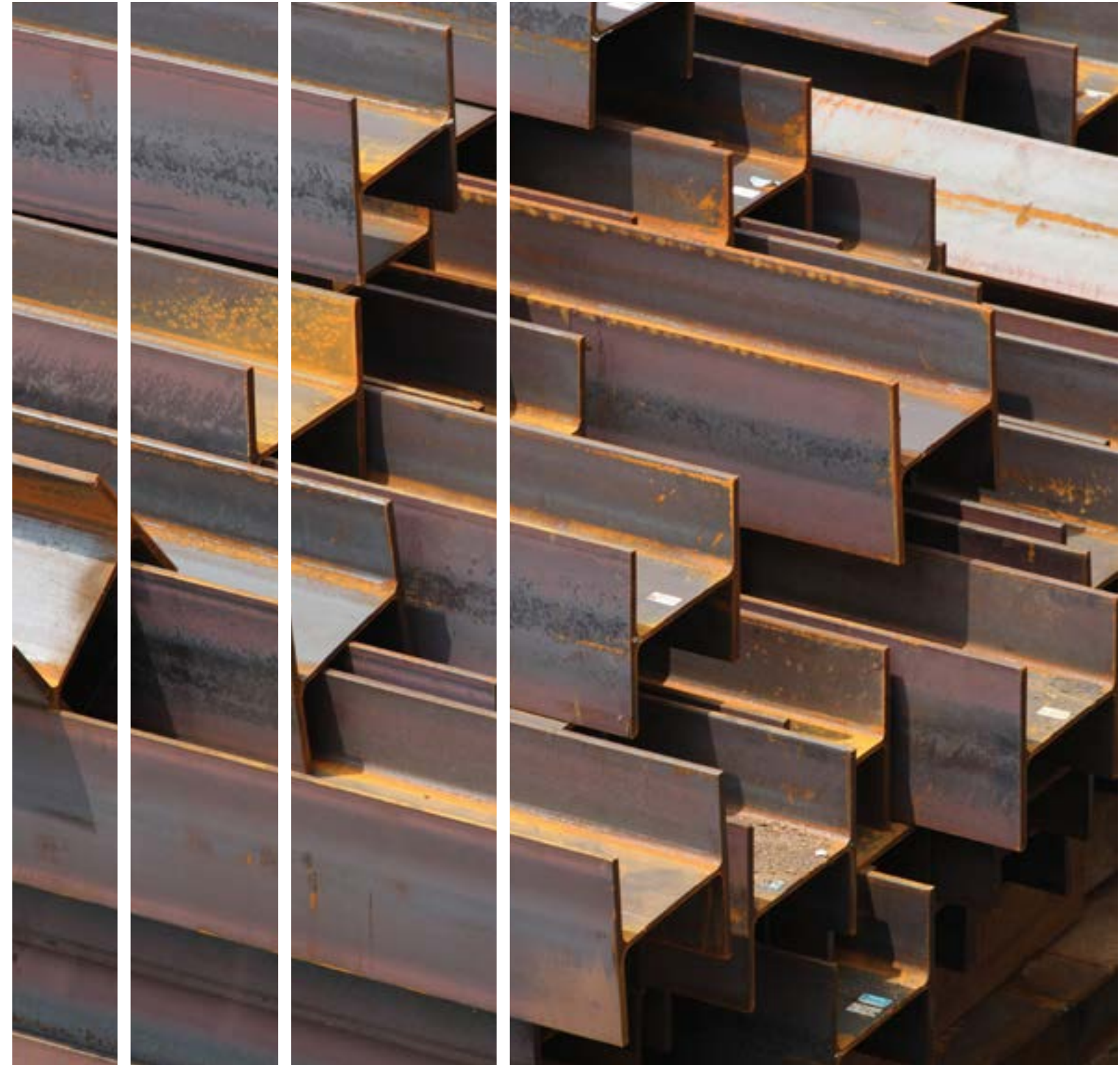
Figure 5.1: Skills Investment Plan vision



# 6

Action plan

The action plan takes each of the themes and outlines areas of work that SDS will take forward with industry and public sector partners. This aims to present strategic commitments for action by SDS, industry and partners, recognising the industry bodies and others will have their own detailed delivery plans in support of the sector.



### Theme 1: Attracting future talent and building on pathways into and through the sector

| Action   | Description  | Partners  | Expected outcome  | Start date                                |
|--|--|---|---|---|
| Promote career opportunities in the construction sector  | <ul style="list-style-type: none"> <li>Engagement in schools targeted at earlier years</li> <li>Refresh My World of Work construction page</li> <li>Improving awareness of careers advisers and guidance staff of sector opportunities</li> <li>Increase industry working with schools and colleges ensuring young people are more prepared for employment and better informed in career choice</li> </ul>   | <p>All stakeholders</p> <p>SDS, Industry</p> <p>SDS, Industry</p> <p>Employers, CITB, Trade Associations, Federations</p> | <p>Increase in awareness of career opportunities in the sector across a broader cohort</p> <p>Increase in breadth of applications for MA places and Construction related programmes</p> <p>400 employer/school partnerships established</p> | <p>Q4 2015 and ongoing</p> <p>Q1 2016</p> |
| Develop Foundation Apprenticeships   | <ul style="list-style-type: none"> <li>Incorporate construction related skills into the curriculum during the senior phase and ensure articulation with other programmes</li> <li>Develop up to 4 Foundation Apprenticeships in construction / civil engineering and scale up approach</li> </ul>  | SDS, Education authorities, SQA, Education Scotland   | Increase in interest and readiness of school leavers to engage in MA programme  | 2015                                      |
| Support the development of an attractive sector culture that contributes to widening the talent pool | <ul style="list-style-type: none"> <li>A programme to help remove barriers to recruitment and retention of traditionally under-represented groups by, for example, introducing more family friendly policies and cultures</li> <li>Implementation of the 'Be Fair' initiative</li> <li>Undertake research to understand the barriers that women and other under-represented groups face in joining the industry, and communicate messages to industry</li> </ul> | CITB, Equate, Federations, Professional Institutions, Trade Associations, employers                                       | Construction workforce moves towards reflecting diversity of general population   | Commence Q4 2015 and ongoing              |
| Develop and deliver a 'Return to Construction' programme and campaign                                | <ul style="list-style-type: none"> <li>Attracting workers from other industries through targeting workers who left the industry with refresher or re-orientation courses or training</li> <li>Development of transition and conversion training to support workers from other industries to work in construction</li> </ul>  | Employers, SDS, CITB, Trade Associations, Federations   | Skilled and experienced staff return to the sector  | Q4 2015                                   |

### Theme 2: Upskilling and workforce development in line with employer demand

| Action   | Description  | Partners  | Expected outcome  | Start date |
|--|--|---|---|------------|
| Develop a management talent pipeline   | <ul style="list-style-type: none"> <li>Support the delivery of Management and Leadership and Growth Fund or Qualifying the Workforce projects through the federations' membership bases</li> <li>Review existing management programmes and scope potential pathways for construction and work with partners to develop solutions</li> <li>Review take up of, and promote MAs in construction management</li> </ul> | <p>CITB, SBF, SPOA, SDF, CECA, Scottish Enterprise</p> <p>Industry and training providers</p> <p>SSCs and SDS, industry</p> | Increase in engagement and demand for upskilling  | Q1 2016    |
| Stimulate demand for workforce development, particularly among SMEs and micro businesses     | <ul style="list-style-type: none"> <li>Our Skillsforce construction hub refreshed and re-launched</li> <li>Promotion of higher-level skills and markets, including the development of core and IT skills</li> <li>Develop and deliver a return on investment campaign to promote training</li> </ul>   | <p>SDS and industry</p> <p>CITB, Trade Associations, Federations</p>  | Increase in engagement and demand for upskilling  | Q4 2015    |
| Annual industry updates – promoting strategic industry skills developments and opportunities | <ul style="list-style-type: none"> <li>Showcase key new buildings and construction projects, highlighting skills shortages, gaps and solutions – e.g. offsite manufacturing, low carbon construction and modern methods of construction</li> <li>Continue to develop and maintain the evidence base around employer skills demands</li> </ul>  | Construction Scotland   | <p>Presentations at each constituents' annual conference</p> <p>Increase in demand for upskilling</p> | Q1 2016    |

### Theme 3: Modernising training and targeting interventions

| Action   | Description   | Partners   | Expected outcome   | Start date          |
|--|---|--|--|---------------------|
| Design future interventions around a regional model of investment  | <ul style="list-style-type: none"> <li>Develop annual regional demand statements to support college regional outcome agreements and MA contracting</li> </ul>   | Construction Scotland and Skills Advisory Committee, CITB, SDS, SFC,   | Skills provision meets industry needs across the regions     | Q4 2015             |
| Modernise provision to ensure fit for purpose content and delivery | <ul style="list-style-type: none"> <li>Design flexible training packages to target small and micro businesses and subjects in low demand</li> <li>Development of new delivery channels that better meet business needs, including online and distance learning</li> <li>Providing CPD opportunities for college and university lecturing staff to keep their experience of industry practice up to date via exchange with employers</li> <li>Developing more effective and accessible models for CPD provision across both specific technical skills and wider management and business skills</li> <li>Encourage the take-up of Environmental Technologies training.</li> <li>Develop a programme to enable early retirees to enter the training profession</li> <li>Embedding soft and business skills in training programmes</li> </ul> | Training providers, Colleges, CITB, Federations, Trade Associations, SDS, Learn Direct & Build<br><br>Learn Direct & Build, Colleges<br><br>CITB, Trade Associations<br><br>Industry, Colleges | More flexible and relevant training programmes are available | Q2 2016 and ongoing |
| Modernise apprenticeship models                                    | <ul style="list-style-type: none"> <li>Development of more flexible models of MA delivery, including shared apprenticeship model</li> <li>Support to increase the number of MA places and a responsive geographical service</li> <li>Improve the accessibility and flexibility of MAs and provide more hands-on support to mentoring micro businesses to employ MAs</li> <li>Stimulate interest and engagement in offering MAs in large companies</li> <li>Development of new foundation and higher level technical/professional MAs to reflect the changing nature of the industry and stimulate demand to support future ambition</li> <li>Introduce new MA models in specialist fields, such as timber frame manufacture and design</li> </ul>   | CITB, SDS, Federations, Trade Associates, Training Providers and Colleges  | More employers engaged in MA programme                       | Q4 2016             |

### Theme 4: Building skills for future growth

| Action   | Description   | Partners  | Expected outcome   | Start date |
|--|---|---|--|------------|
| Development of business and management skills    | <ul style="list-style-type: none"> <li>Design short, sharp curriculum and funding model for business development, people development and planning</li> </ul>  | CITB, Federations, training providers, Trade Associations SDS, Scottish Enterprise                    | Enterprise skills are developed<br><br>Long term business sustainability | Q1 2016    |
| Development of innovation skills                 | <ul style="list-style-type: none"> <li>Stimulate business engagement skills in innovation and new opportunities for sector growth, e.g. off-site manufacturing, BIM, low carbon construction and modern methods of construction</li> <li>Off-site manufacturing and building information modelling skills training</li> </ul>                               | Construction Scotland Innovation Centre, SDS, SFC, Construction Scotland, Scottish Enterprise         | Businesses better equipped for future growth                             | Q4 2016    |
| Developing skills for engaging the public sector | <ul style="list-style-type: none"> <li>Programme of skills development for small business managers in winning public contracts</li> <li>Development of public procurement module for FE/HE</li> <li>Customer relationship management development programme</li> <li>Engagement with public sector through CITB 'Client Based Approach' programme</li> </ul> | Federations, training providers and colleges, CITB, Trade Associations Supplier Development Programme | Smaller businesses better equipped to win more contracts                 | Q4 2016    |



# 7 Monitoring and implementation

The co-ordination and delivery of the SIP will be led by the SDS construction sector manager and overseen by the Construction Scotland skills group.

Specifically, SDS will facilitate the following:

- co-ordinating the activities of partners in support of the action plan and reporting on progress to the skills group
- developing a performance framework including indicators of success to monitor progress of individual actions, as well as the overall performance of the SIP. It will also be important to consider how progress can be reflected within the outcome agreements developed by the colleges and universities
- where required, securing resources to support the implementation of activities set out in the action plan
- co-ordinating the delivery of specific projects through working in partnership with public sector and industry colleagues to ensure they are delivered in areas of need.

It is proposed that a formal review of the SIP and action plan will be undertaken 24 months after the launch of the document and a statement of progress will be produced by SDS on behalf of the skills group.



*"It is proposed that a formal review of the SIP and action plan will be undertaken 24 months after the launch of the document."*

# Appendix 1

## Definition of construction sector by SIC 2007 codes

| Sub-Sector                                  | SIC   | Description  | Attributable activity |
|---|-------|--|-----------------------|
| Manufacturing of Construction Related Goods | 2200  | Logging  | 20%                   |
|   | 8110  | Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate   | 70%                   |
|   | 8120  | Operation of gravel and sand pits; mining of clays and kaolin                    | 70%                   |
|   | 16230 | Manufacture of other builders' carpentry and joinery                             | 40%                   |
|   | 20301 | Manufacture of paints, varnishes and similar coatings, mastics and sealants      | 25%                   |
|   | 20302 | Manufacture of printing ink  | 25%                   |
|   | 22110 | Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres | 20%                   |
|   | 22190 | Manufacture of other rubber products   | 20%                   |
|   | 22230 | Manufacture of builders ware of plastic  | 35%                   |
|   | 23320 | Manufacture of bricks, tiles and construction products, in baked clay            | 85%                   |
|   | 23410 | Manufacture of ceramic household and ornamental articles                         | 60%                   |
|   | 23420 | Manufacture of ceramic sanitary fixtures   | 60%                   |
|   | 23430 | Manufacture of ceramic insulators and insulating fittings                        | 60%                   |
|   | 23440 | Manufacture of other technical ceramic products                                  | 60%                   |
|   | 23490 | Manufacture of other ceramic products  | 60%                   |
|   | 23510 | Manufacture of cement  | 25%                   |
|   | 23520 | Manufacture of lime and plaster  | 25%                   |
|   | 23610 | Manufacture of concrete products for construction purposes                       | 90%                   |
|   | 23620 | Manufacture of plaster products for construction purposes                        | 90%                   |
|   | 23630 | Manufacture of ready-mixed concrete  | 90%                   |
|   | 23640 | Manufacture of mortars   | 90%                   |
|   | 23650 | Manufacture of fibre cement  | 90%                   |
|   | 23690 | Manufacture of other articles of concrete, plaster and cement                    | 90%                   |
|   | 25110 | Manufacture of metal structures and parts of structures                          | 60%                   |
|   | 25120 | Manufacture of doors and windows of metal  | 60%                   |
|   | 25210 | Manufacture of central heating radiators and boilers                             | 40%                   |
|   | 25290 | Manufacture of other tanks, reservoirs and containers of metal                   | 40%                   |

| Sub-Sector                          | SIC   | Description   | Attributable activity |
|-------------------------------------|-------|---|-----------------------|
| (continued)                         | 25300 | Manufacture of steam generators, except central heating hot water boilers | 40%                   |
|                                     | 26110 | Manufacture of electronic components                                      | 35%                   |
| Construction of Buildings           | 41100 | Development of building projects  | 100%                  |
|                                     | 41201 | Construction of commercial buildings                                      | 100%                  |
|                                     | 41202 | Construction of domestic buildings  | 100%                  |
| Civil Engineering                   | 42110 | Construction of roads and motorways                                       | 100%                  |
|                                     | 42120 | Construction of railways and underground railways                         | 100%                  |
|                                     | 42130 | Construction of bridges and tunnels                                       | 100%                  |
|                                     | 42210 | Construction of utility projects for fluids                               | 100%                  |
|                                     | 42220 | Construction of utility projects for electricity and telecoms             | 100%                  |
|                                     | 42910 | Construction of water projects  | 100%                  |
|                                     | 42990 | Construction of other civil engineering projects nec                      | 100%                  |
| Specialised Construction Activities | 43110 | Demolition  | 100%                  |
|                                     | 43120 | Site preparation  | 100%                  |
|                                     | 43130 | Test drilling and boring  | 100%                  |
|                                     | 43210 | Electrical installation   | 100%                  |
|                                     | 43220 | Plumbing, heat and air-conditioning installation                          | 100%                  |
|                                     | 43290 | Other construction installation   | 100%                  |
|                                     | 43310 | Plastering  | 100%                  |
|                                     | 43320 | Joinery installation  | 100%                  |
|                                     | 43330 | Floor and wall covering   | 100%                  |
|                                     | 43341 | Painting  | 100%                  |
|                                     | 43342 | Glazing   | 100%                  |
|                                     | 43390 | Other building completion and finishing                                   | 100%                  |
|                                     | 43910 | Roofing activities  | 100%                  |
|                                     | 43991 | Scaffold erection   | 100%                  |
|                                     | 43999 | Specialised construction (other than scaffold erection) nec               | 100%                  |

## Appendix 1 continued

### Definition of construction sector by SIC 2007 codes

| Sub-Sector                               | SIC   | Description   | Attributable activity |
|--|-------|---|-----------------------|
| Retail of Construction Related Goods     | 46130 | Agents involved in the sale of timber and building materials  | 50%                   |
|  | 46630 | Wholesale of mining, construction and civil engineering machinery   | 50%                   |
|  | 46730 | Wholesale of wood, construction materials and sanitary equipment  | 50%                   |
| Architectural and Engineering Activities | 71111 | Architectural activities  | 100%                  |
|  | 71112 | Urban planning and landscape architectural activities   | 50%                   |
|  | 71121 | Engineering design activities for industrial process and production   | 50%                   |
|  | 71122 | Engineering related scientific and technical consulting activities  | 50%                   |
|  | 71129 | Other engineering activities (not including engineering design for industrial process and production or engineering related scientific and technical consulting activities) | 50%                   |
|  | 74902 | Quantity surveying activities   | 100%                  |

Source: SE/SQW Analysis of SIC Codes



## Appendix 2

### Definition of construction sector by SOC 2010 codes

| Sub-Sector                                       | SIC   | Description                                       |
|--|---|---|
| Managers, directors and senior officials         | 1122  | Production managers and directors in construction |
|  | 1251  | Property, housing and estate managers             |
| Professional occupations                         | 2121  | Civil engineers                                   |
|  | 2122  | Mechanical engineers                              |
|  | 2123  | Electrical engineers                              |
|  | 2431  | Architects  |
|  | 2432  | Town planning officers                            |
|  | 2433  | Quantity surveyors                                |
|  | 2434  | Chartered surveyors                               |
|  | 2435  | Chartered architectural technologists             |
| 2436   | Construction project managers and related professionals |   |
| Associate professional and technical occupations | 3112  | Electrical and electronics technicians            |
|  | 3113  | Engineering technicians                           |
|  | 3114  | Building and civil engineering technicians        |
|  | 3121  | Architectural and town planning technicians       |
|  | 3122  | Draughtspersons                                   |
|  | 3544  | Estate agents and auctioneers                     |
| Skilled trades occupations                       | 5241  | Electricians and electrical fitters               |
|  | 5311  | Steel erectors                                    |
|  | 5312  | Bricklayers and masons                            |
|  | 5313  | Roofers, roof tilers and slaters                  |
|  | 5314  | Plumbers and heating and ventilating engineers    |
|  | 5315  | Carpenters and joiners                            |
|  | 5316  | Glaziers, window fabricators and fitters          |

| Sub-Sector  | SIC  | Description                                  |
|---|------|--|
| Skilled trades occupations (continued)            | 5319 | Construction and building trades n.e.c.      |
|   | 5321 | Plasterers                                   |
|   | 5322 | Floorers and wall tilers                     |
|   | 5323 | Painters and decorators                      |
| Process, plant and machine operatives             | 5330 | Construction and building trades supervisors |
|   | 8142 | Road construction operatives                 |
|   | 8143 | Rail construction and maintenance operatives |
|   | 8149 | Construction operatives n.e.c.               |
|   | 8221 | Crane drivers                                |
|   | 8222 | Fork-lift truck drivers                      |
| Elementary administration and service occupations | 9120 | Elementary construction occupations          |

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