CONSTRUCTION SCOTLAND

Economic impact of the sector

1. **How important is the construction sector in Scotland as an economic enabler? If possible, please provide evidence of knock-on multiplier impacts at local, regional and national levels, and explore the impact of the sector on national GDP performance.**

**The impact of construction investment on economic output** – According to LEK in their 2009 report “Construction in the UK Economy”, construction is one of the most effective sectors in which the government can invest to stimulate economic activity, due to its extended and varied supply chain and relatively low level of imported components. Construction involves the design, procurement and assembly of the products of a wide range of companies in classifications beyond “core” construction. In a 2017 report for Scottish Enterprise, “Profile of Scottish Construction Sector”, SQW assessed that the indirect impact of core construction on turnover and GVA was a multiplier of 1.6. The following table shows the direct and indirect contribution of the sector (including housebuilding, infrastructure, professional services and supply chain) to economic output measures:

<table>
<thead>
<tr>
<th>Economic impact</th>
<th>Core construction only (SIC 41,42,43)</th>
<th>Inclusive of professional services and supply chain (x 1.6 multiplier)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment (direct only)</td>
<td>123,000</td>
<td>198,000</td>
</tr>
<tr>
<td>Turnover</td>
<td>£17.4bn</td>
<td>£27.7bn</td>
</tr>
<tr>
<td>GVA</td>
<td>£7.11bn</td>
<td>£11.37bn</td>
</tr>
</tbody>
</table>

In their 2009 report, LEK assessed that each £1 spent on construction generates a total of £2.84 in total economic activity, once all indirect and induced impacts such as increased household incomes are included. The benefits of construction are that this increase in economic activity can be focussed in the geographical area of the project and therefore new construction projects act as an accelerator for local economic development, when planned in consultation with potential private sector investors in other growth sectors.

There is another side to this story however – that of **economic blockers and leakage.**

Economic leakage occurs when the additional economic activity stimulated by Scottish construction activity occurs elsewhere. Examples include:

- The use of single sourced frameworks which return profits to non-Scottish Procuring Authorities.
- The award of major infrastructure projects to firms that have no “day to day” presence in Scotland
- Works being subcontracted out of the Scottish economy

The way many construction projects are procured through lowest price can also have the opposite effect where the ‘pain’ is passed through the local supply chain and what should be a mechanism to promote growth can become the opposite and put large financial pressures on local businesses.
There is evidence that some Scottish procuring bodies have even deliberately courted “foreign” companies to come to Scotland in the knowledge that their pricing structure undercuts incumbent Scottish domiciled companies.

The urgent need for a re-think on the way we design, specify and procure – to maximise economic output

If we want to ensure that we maximise the amount of economic output that stays within Scotland we need to think more strategically about our design and procurement approaches.

Some examples of ways in which we could do this:

- We can design our buildings around materials and techniques that we already have the skills and resources to deliver and avoid importing materials and skills that we don’t currently produce here. One example of such capability is in timber frame design and construction.
- We take the lead in standardising design solutions for similar buildings and aggregating volume in collaborative delivery models (as argued in our responses to Q2 and Q11) and use volume to build a local offsite manufacturing capability that could supply UK and international markets
- We procure collaboratively, selecting suitable firms whose staff live, work and pay tax in Scotland, and who have a Scottish supply chain, to encourage growth and investment in the Scottish construction industry.

Construction Scotland welcomes the Scottish Government Economic Action Plan’s intention to step up engagement with the construction sector and that prevention of economic leakage should be a key part.

2. What are the causes of the sector’s productivity challenges? Can you suggest possible solutions?

The “Productivity/profitability” issue: Productivity in construction is difficult to compare at a micro level, due to the “bespoke” nature of much of the output. It is also “location sensitive” and delays on site can occur for many reasons outwith the control of the sector. Notwithstanding that, a recent SQW report for Scottish Enterprise states that the average GVA per employee in construction (including related professions and supply chain) is £61,000 compared to an average of £53,000 for all other sectors.

Nevertheless, there is much discussion about the apparent failure of the sector to increase its “productivity” over the past 10 years (i.e. since the market crash in 2008) but we believe that this reflects not so much a failure to increase productivity but is more a reflection of the highly competitive market that much of construction operates within. In periods of recession, construction companies face increased competition for scarce work. This is compounded by customers changing procurement models to take advantage of the low (sometimes extremely low) prices available. Any increase in real productivity is therefore transferred to the customer in the form of lower tender prices, whilst company profitability actually falls at all levels of the supply chain. This is bad for the sector as a reasonable profit is needed to allow the sector to invest in training and new methods of working, to provide resilience against risk and to fund innovation.
Changing the procurement approach to end the obsession with lowest tender price and focus on budget achievement would be one part of the solution to this issue – see our response to Q11.

Standardisation, repeat projects, volume aggregation and offsite manufacturing:
From a productivity perspective, in an ideal world the construction sector would be like the car industry and be in complete control of the planning, design, specification, procurement, assembly and marketing of its products. The sector and its supply chain would have the benefits – where appropriate for the nature of the project - of standardised components and volume aggregation, enabling the establishment of long term supply chains and resulting improvements in productivity, investment and digitisation. The closest our industry currently comes to this business model is in volume house-building.

Bespoke projects currently comprise the bulk of the industry’s output, with conceptual design and specification substantially separated from construction, and the main way that repeat customers and industry can influence productivity is through the adoption of collaborative procurement, standardised design solutions (where appropriate) and the bundling of projects to allow volume aggregation. This would allow delivery models that encourage supply chain teams to stay together, devising ever more productive and efficient methods of working over time.

Standardising design does not mean uniformity of appearance but does mean adopting a standard pallete of materials and a standard approach to their use and combination, as the rUK government is already doing through the adoption of “platform” methods of manufacture, common in car manufacture, for their prisons, schools and hospitals. (See our response to Q.5)

Scotland has an opportunity to develop such methods and to export platform components to the rUK market through effective use of capital procurement to support development of a “home” market.

Improving the performance of utilities Another significant area of impact on the ability of the industry to increase productivity is that of the performance of utilities. Construction activities, being “place” sensitive, are uniquely dependent upon the performance of the utility companies – whether it is in identifying and removing existing services or in the provision of new supplies. This is an issue that cannot be resolved by moving to offsite construction and is generally outwith the control of the industry and yet has a significant ability to delay projects.

The reduction of error in design and construction
The recent ICE report “Get it Right” highlights the impact of errors (by all parties to the process) on construction cost. Combined with the impact such failures have on the quality of work, the safety of the building occupants and compliance with building standards (as highlighted in recent reports on building failures) mean that the “re-booting” of quality management in the digital age is a key focus for the sector.
The ICE report also highlighted the impact of design on construction error: design not taking account of “buildability” and tolerances; the disruptive effect of design change during the construction process and the impact of poorly coordinated design information.

Design and construction organisations, as a result of the bespoke nature of each design and the unpredictability of site conditions, are constantly innovating in the solutions they adopt to overcome problems and negate risks. Whilst the major risks in the ground will likely always be there, customers can do much to improve productivity through adoption of standardised designs, as already stated.

3. *How effective is Scotland’s construction supply chain? Explore areas of gaps, duplication, etc.*

Scotland’s main contractors and housebuilders have access to an adequate and effective supply chain of subcontractors, whether Scotland-specific or UK-wide, able to offsite assemble or construct elements on site and the wide variety of successful projects completed each year attests to this.

However, other than in offsite timber frame, where we have a unique capability that is being exported and exploited nationally, Scotland has a limited manufacturing base, and many of the wide range of manufactured products that are assembled on or off site to complete buildings have to be imported from rUK or elsewhere.

Our public procurement should be better utilised to assist development of an offsite manufacturing supply chain, taking offsite solutions beyond housing and into more diverse export sectors.

4. *What is the future economic outlook and implications of Brexit on the sector?*

Construction is both a major supplier of public infrastructure and an enabler of growth in every other private industry/sector. It relies very heavily on both government economic and social investment strategy and on the health of other private sectors for its own growth. EU funding contributes a significant, although diminishing, part of the funding for projects constructed. The part of the industry that provides private sector housing and services the domestic market also relies on the overall performance of the economy and the resulting confidence of consumers. Uncertainty, from any cause, impacts on confidence in all sectors and cannot fail to impact upon construction. Equally, due to an ageing workforce and the hiatus on the training pipeline caused by the 2008/09 financial crisis, any potential reduction in the availability of skilled personnel (whether directly or due to migration to England to fill gaps) will clearly have an impact.

Increased costs and delays in importing materials and equipment would also have an impact.

5. *The UK Industrial Strategy Challenge Fund and the linked Sector Deal for construction aim to address issues such as improving procurement practices, skills, exports and innovation. How do these impact on Scotland?*

The UK Industrial Strategy Challenge Fund is designed, in part, to address some of the issues raised in this response and there will, undoubtedly, be opportunities for Scottish businesses to obtain R&D funding and develop exportable products, however there is also
a risk for Scotland’s economy. The Sector Deal supports delivery of the £600bn National Infrastructure and Construction Pipeline, the great majority of which does not apply to Scotland.

The Sector Deal is predicated on a “presumption in favour of offsite” which encourages 5 key UK government departments (most of which have no remit in Scotland) to focus on standardising design and aggregating spend to allow the economic development of offsite technologies. Whilst Scottish businesses can work (potentially assisted by the CSIC) to develop solutions to tackle the rUK market, it would be much more effective if Scottish public procurement was to support that development by mirroring or even accelerating adoption of offsite solutions, including the collaborative procurement and standardised design palletes required to make it economic.

Without a local market to build on, the risk is that offsite solutions for Scottish social infrastructure projects will eventually be met by suppliers based elsewhere to supply the rapidly emerging rUK market, resulting in further economic leakage. See our response to Q1 and Q2.

Access to finance
6. *What are the sources of and barriers to accessing finance in the sector? We would welcome perspectives from all sizes of businesses from micro through to Tier 1.*

Construction Scotland is aware that accessing finance has been a major hurdle for many smaller construction companies looking to build houses or develop manufacturing capability. This may be diminishing as new sources of finance enter the market, but we believe there is still caution, on both sides. We would refer you here to responses from the FMB, SBF, CECA and HFS regarding the recent experiences of their members in accessing development finance.

7. *What are your views on payment terms and payment behaviours across the sector?*

Payment terms are commercial obligations and rights, freely entered into by contracting parties. In an industry with exceptionally low operating margins, cash generation is absolutely key at all levels in the supply chain and extended terms (30 to 60 days) are often requested (and agreed) between parties. There is anecdotal evidence of payments being delayed beyond agreed terms, including payments due from public sector customers, tier 1 and sub-tier supply chain members but until recently there has been little research or hard evidence to substantiate the extent of this. Delays in payment can also arise from a number of causes, including disputes over the amounts claimed and through errors in the information supplied. Surveys and information gathering now in-hand will help provide evidence of actual performance, but Construction Scotland believes that the main change that can be made is in the method of procurement, to ensure that all members of the design and construct team receive an adequate return for their efforts.

In the case of retentions, we believe the aim should be to see them abolished completely by 2023. The failings in the system are widely recognised and there have been many calls for the industry’s customers and contractors to end their use. These have failed to gain traction, due principally to the lack of experience of, or research into, the use of alternative forms of project assurance, including the benefits of long term relationships between the parties.
It is to be hoped that the Scottish Government’s newly announced research project will fill at least some of those gaps in knowledge. It is disappointing that the UK Government have not yet published the results of their own consultation into the use of retentions in England, which closed in February 2018, and against that background, the new Scottish Government consultation is a welcome development, if it results in a speedier identification of a solution that works for everyone."

8. How effective is the financial management of large scale infrastructure projects and the mechanisms used e.g. project bank accounts?

Construction is an inherently risky activity where out-turn costs are hard to quantify. The evidence suggests that large scale infrastructure projects are procured at a cost level that is unsustainable and the resulting high incidence of delayed completion and financial losses to contracting organisations is unsustainable in the long term. There is little evidence that Project Bank Accounts will resolve the issue of there being insufficient funds in the contractors bid and the issue is as much underpayment (often due to disputed amounts) as late or non-payment. On the other hand, specialist contractors do report that they are paid more quickly when project bank accounts are used and that benefit has to be considered

Skills

9. Does the sector’s skills planning model allow it to realise its full potential, in terms of attracting talent, meeting skill shortages, preparing for technological change?

The sector planning model for construction in Scotland is based around a Skills Investment Plan that was produced by SDS and Construction Scotland in March 2015. The industry (and hence the model) is complex, with many organisations involved at both a UK and Scottish level. Monitoring of the implementation of the SIP was undertaken by a CITB skills committee, chaired by the chair of Construction Scotland but with the ongoing changes in the priorities of CITB, there is an urgent need for a new, pan industry, Skills Group to be formed to ensure industry input into delivery and design of the correct standards and qualifications for the industry, including apprentice frameworks. Construction Scotland are working with SDS, CITB and industry representative and trade bodies to establish such a group.

The SQA also needs to be guided by industry bodies. This should be led by a pan industry group. At the moment there are several groups being created to influence training and qualification needs and there is a danger it becomes fragmented, with some influencing change to the detriment of other industry sub-sectors.

CS considers that the best way to attract new talent and thus meet future skills shortages is through increasing the diversity of the workforce. This will mean changing the reality and perception of the industry and, in particular, promoting the industry as a positive career choice for all, through continued support for and expansion of the CS education outreach programme, “Inspiring Construction”. This programme seeks to provide a unified message, complementing existing outreach programmes, and demonstrating the multiple routes of entry to the industry and the range of opportunities available.

As regards preparing for technological change, CS believes that the current system for introducing change into college course content is too cumbersome to react to a rapidly changing environment.
A longer term construction plan for Scotland would assist with identifying future technological changes and facilitate the earlier introduction of change into the college system.

10. How does Scotland’s apprenticeship system contribute to the sector? Is it doing enough to meet equality challenges in the sector?

Scotland’s apprenticeship system underpins the skills base of the sector and numbers of apprentices are increasing. However, many potential employers do not understand either the funding routes or means to set up apprenticeships and this has to be addressed to ensure we unlock opportunities across the industry. There is also a continuing need to ensure that the content of apprenticeship courses meets industry needs, balancing those needs in terms of both numbers and the content/quality of training.

Although much has been done in an attempt to increase diversity, the number of women entering apprenticeships is not increasing. The marketing of apprenticeships needs to focus on ensuring the best chance of diversity, with better use being made of the preferred apprenticeship and work experience websites, along with the latest social media, to ensure visibility of the full range of opportunities to school leavers.

Retention of those women in trades skills is also a big challenge as evidence suggests most move on to office based roles, move out of the industry or move on to gain higher technical/professional qualifications. This may reflect poor standards of welfare on sites or a lack of career paths within the trades.

Industry must be encouraged to reflect on their workplaces and to ensure they are fair and inclusive to all. One way of doing this is through sharing the findings of companies who have thrived and improved through a more diverse working environment. This is an area of focus for the Construction Scotland skills group.

Procurement

11. How do public procurement practices and procedures impact on the sector?

Construction Scotland believes that the way in which public construction projects have traditionally been procured and delivered has been the dominant factor in the development of the industry’s structure and behaviours and that the primary route to achieving the improvement in industry outcomes that we all seek is through changing the way in which we procure and deliver our buildings and infrastructure. The ways in which this can be achieved include:

Moving to collaborative forms of procurement and ending lowest tender price bidding: Lowest tender price driven, transactional, single stage, procurement processes (even where “quality” is ostensibly part of the evaluation) inevitably result in low margins for the main contractor (and for most of their supply chain) that leave little room for error or misfortune and thus hinder contractors from building resilience or investing in innovation and skills development.

They also frequently result in cost overruns for customers and Construction Scotland believe that public procurers should focus instead on achieving overall budget and project outcomes. One way of achieving this is the use of collaborative forms of procurement such
as Early Contractor Involvement (ECI) or other 2 stage bid processes which result in a more equitable risk allocation.

**Adoption of longer term relationships:** The practice of procuring projects individually leads to a lack of continuity for project teams – meaning lessons learnt cannot be transferred to the next project and inhibiting investment in supplier development, product research, innovation, apprentice training, direct employment, skills, etc. Long-term procurement approaches such as frameworks, alliances and partnerships (and the potential for volume aggregation and standardisation that they bring) set much better conditions for the characteristics of a modern industry to emerge.

12. *Do you have any suggestions on opportunities to enhance procurement practices across the sector?* See our response to Q 11 above.

**Infrastructure investment**

13. *Considering the national infrastructure construction pipeline, is the planned pipeline sufficient?*

The planned Scottish Infrastructure Commission should help to answer this question in terms of economic infrastructure, as long as that body consults directly with private industry and investors on where the new infrastructure needs to be built to ensure maximum economic growth through targeted value added investment. The industry relies on government at all levels to determine the needs for social infrastructure to support that economic growth.

*And has the sector got to the ability to meet the country’s infrastructure needs to drive growth?*

Yes, if pipeline planning decisions are undertaken in collaboration with the industry to avoid economic leakage through avoidable peaks and troughs. An example would be the delivery mechanism for the A9 - see our response to Q1.

**Innovation**

14. *What are your views on the Construction Scotland Innovation Centre?*

The industry has a poor record in supporting formal innovation initiatives such as “Lean construction” or research, mainly because of the “project by project” nature of procurement and the “bespoke” nature of most designs – all as described earlier in this document.

This is compounded by the inadequate margins that contractors and consultants make on the risky projects that they are asked to undertake, and which provide little scope for R&D spending

The impact of these factors is that innovation in product can generally only be initiated by original equipment manufacturers or volume house or accommodation builders, who have control over their product from concept to sale. We have indicated in Q1, 2 and 11 how we see these factors being improved.

Construction Scotland were fully behind the establishment of a construction innovation centre in Scotland, to help the industry become more efficient/productive/profitable through
accessing the existing research capabilities of Scottish universities and other bodies of knowledge.

The CSIC has clearly acted as a broker to help individual companies and consortia to commercialise micro ideas by linking them with researchers and funding and thus increase their individual economic output. However, due to the way in which the innovation centre has thus far been funded and governed, it has not been able to support (without additional payment) the more strategic, policy, and “transformational” research needs of the overall industry, identifying and promoting solutions to issues, the resolution of which could accelerate industry performance in the medium to long term but is not “commercially exploitable” in the short term.

Construction Scotland has also been disappointed that there is no mechanism to bring existing construction related research to the attention of the wider industry – for example, via a portal or through regular bulletins. This has been compounded by the commercial nature of the projects undertaken for individual companies and consortia, which prevent the dissemination of new ideas to the industry at large.

These issues may be resolved in full or part under the CSIC Stage 2 funding arrangements, but Construction Scotland has not had sight of those at the point of writing.

15. Where are the opportunities for growth within sub-sectors, e.g. offsite construction?

The “offsite” issue: Building off-site is simply an alternative construction strategy. It can result in improved quality but requires standardisation of design solutions and volume aggregation to be economically viable, unless site conditions require it. These concepts are gaining greatest traction in volume housebuilding, student and hotel accommodation, although they do require higher levels of capitalisation than traditional practices and this is a barrier to entry for some.

As outlined in our response to Q.1 the growth opportunity lies in developing a “home grown” offsite industry that can export – initially to the rUK but eventually to the EU and beyond. This may emerge in response to procurement changes being made elsewhere in the UK – see Q5 - but we suggest that there is an opportunity for the Scottish Government to standardise designs, aggregate volume and change delivery models to ensure that an economically viable offsite industry can develop and thrive in Scotland.

16. How will technological changes (e.g. robotics, automation) impact on the sector? How can Scotland take advantage of this change?

Technological change is already impacting on the sector:

- housebuilders and developers are already using or investigating the use of prefabricated CLT, steel container or light steel kits from Europe or beyond that mean factory assembled rooms and whole flats are being imported ready for occupation.
- Light steel and timber framing systems that are automatically fabricated offsite are already being used in place of timber kits that require the skills of a joiner to assemble
• Larger contractors and most design consultants already make extensive use of BIM and iPad based software systems in their projects to control quality, check for clashes and assist planning.
• Robotic earthmoving kit is already operating on major roads projects

Scotland can best take advantage of the changes by ensuring the open source dissemination of research regarding the availability, use and benefits of such technology, to ensure that developments are made available to the entire industry and its customers.

Also, manufacturing methods of production of bespoke products is uneconomic unless site conditions require it. To accelerate the use of such techniques beyond existing volume products such as accommodation units will require (as covered in other responses) a determined effort to standardise design solutions, aggregate volume and place contracts in such a way that robotic and offsite methods become routinely economic.

There will of course be a reduction of the number of skilled trades required for assembly of such “manufactured” products and the “down-skilling” of the new jobs created – assembly of factory produced standard products will not require the same skill level as bespoke build in situ or repairs and maintenance on existing assets.
ECONOMY, ENERGY AND FAIR WORK COMMITTEE

AGENDA

12th Meeting, 2019 (Session 5)

Tuesday 2 April 2019

The Committee will meet at 9.45 am in the David Livingstone Room (CR6).

1. **Decision on taking business in private:** The Committee will decide whether to take items 3 and 4 in private.

2. **Construction and Scotland’s Economy:** The Committee will take evidence from—

   Ken Gillespie, Chair, Ann Allen MBE, Member, and Ron Fraser, Executive Director, Construction Scotland Industry Leadership Group.

3. **Construction and Scotland’s Economy:** The Committee will consider the evidence heard at today’s meeting.

4. **Work programme:** The Committee will consider its work programme.

Alison Walker
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Tel: 0131 348 5207
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The papers for this meeting are as follows—

**Agenda Item 2**

PRIVATE PAPER  
Written Submission

**Agenda Item 4**

PRIVATE PAPER