ECA and BESA response to the Industrial Strategy consultation

About the BESA, ECA and the engineering services sector

ECA/BESA represents the bulk of the UK’s engineering services sector, a major and increasingly important part of the UK economy that operates across engineering, construction, and maintenance. Overall, the engineering services sector is estimated to account for up to 40% of both UK construction and maintenance turnover.

Almost 90 per cent of the value of UK buildings and infrastructure is realised during its operating life, and our sector provides the design and engineering services for UK building and infrastructure assets, which includes:

- domestic premises;
- commercial, industrial, public sector and other premises; and
- essential infrastructure such as utilities, communications and transport.

The engineering services sector helps to ensure that these assets are safe, secure and sustainable. Functional activities covered by our sector include:

- energy management and efficiency
- air quality
- heating
- lighting
- building productivity and ambience
- fire and security systems
- cooling and refrigeration
- energy supply and resilience
- renewables, and
- data communications and wireless technologies.

Within the overall sector, ECA and the BESA members represent some 4000 businesses, with a combined annual turnover in excess of £10bn. ECA and BESA also work closely with Scottish electrical trade body SELECT.
1. Does this document identify the right areas of focus: extending our strengths; closing the gaps; and making the UK one of the most competitive places to start to grow a business?

Broadly, yes.

Both the BESA and ECA welcome the opportunity to provide input to the Industrial Strategy on how the engineering services sector can contribute to a successful future for UK industry, commerce and society.

We believe that the objective of the strategy should be underpinned by “growth that delivers economic and social value in a way that is low-carbon and resource efficient” (that is “growth with sustainable development”). We also believe that more emphasis on exploiting renewable and stored energy, energy efficiency, resource productivity and a ‘circular economy’ will further support the strategic aims.

The digital and energy arenas are particular area of opportunity for the UK economy and we believe it is vital to link innovation, R&D, skills, digital approaches and low carbon measures to transform UK transport and infrastructure.

High standards in support of the above will support research and investment in innovative and even disruptive products and services, in the UK and internationally. Similarly, we believe that fiscal drivers can create significant opportunities for businesses to develop and support innovation.

In any scenario, UK business needs long-term policy certainty, allied to sufficient cash flow, as pre-conditions for unlocking the investment needed to realise the ambitions of this industrial strategy.

Against a backdrop of globalisation and commercial revolution through digital disruption, the focus of a UK industrial strategy must be to:

• bridge the gap between the international competitive position of the UK economy (including supporting its contributions to the global economy), and ensuring the domestic skills, investment, fiscal frameworks and other necessary interventionist arrangements are in place, to support the commercial organisations, people, institutions and infrastructure necessary to achieve prosperity and growth;

• provide a space and environment in the UK whereby the commercialisation of innovation is encouraged (and not inhibited) and facilitated by social, economic and Government infrastructure. This will help the UK to secure a position as one of the global intellectual leaders in engineering innovation.

• open routes to enter other global markets in order to export, and scale up, UK engineering innovation.

• through sector deals, facilitate, for the purposes of productivity and growth, an efficient market structure and dynamics for each sector.
For example, in the UK economy some 80% of people are employed by SMEs and in the built environment 99% of businesses are SMEs who usually reside within supply chains that are 4 to 5 levels deep. This means that sectors are highly fragmented and delivery of value is usually separated from the point of client procurement. More importantly, the construction process (valued at around 10% of the whole-life cost of buildings and infrastructure) is usually isolated from the asset operating and maintenance process (valued at 80% of the whole-life cost of the asset). This usually leads to low value construction, which then increases the cost of operating the built asset.

Connecting the commercial models of construction and operation of the built-environment will disrupt the market to enable housing, public infrastructure and the wider built-environment to drive long term value, and boost innovation and sustainability.

2. Are the ten pillars suggested the right ones to tackle low productivity and unbalanced growth? If not, which areas are missing?

Yes. We support the chosen 10 pillars and believe the engineering services sector has a key role in enabling the UK productivity, sustainability and growth agenda.

An overarching industrial strategy should have UK-wide goals supported by industry and sectoral approaches, with targets and corresponding support.

ECA/BESA members are at the forefront of research and innovation in the field of engineering solutions for a low carbon economy, a safe environment, SMART homes, SMART heat, SMART energy, SMART cities, SMART grids and SMART buildings.

In achieving the above, and in the face of a looming skills crisis, our members have plans on how to develop engineering, technical and other professional skills, but we will need Government assistance to facilitate those plans.

In delivering the technologies that enable the built-environment to function and to continually evolve in smarter ways, our sector can, provided there is procurement and supply chain integration, bring both high value and innovation to building and infrastructure engineering.

As the structure of our market (explained above) is highly populated/fragmented with SMEs, business growth and investment depends on improving Government support (as both Government and client) and recognition of the SME agenda and the challenges SMEs and others face in stabilising their commercial models to plan for strategic growth - we look forward to continued Government support in this area.

There are various methods of improving pre-qualification, procurement and improving commercial behaviour in order to improve product quality, but our key driver (as explained above) is the need to connect, within the procurement process, construction with asset operation in order to optimise client value (noting the public sector accounts for over 40% of client demand).
Due to the lack of front-end collaboration between the different parts of the supply chain and the separation of construction and asset operation in the built-environment, whole-life costs (primarily maintenance and operational costs) remain unnecessarily high for many facilities and the built environment still contributes almost half of the UK’s carbon emissions. Recent studies have indicated that the current asset ‘performance gap’ can be up to 300% higher than that contemplated at the design stage.

Our members are at the forefront of scientific and engineering innovation on smart homes, smart grids, energy storage and smart heating from a renewable energy perspective. This includes how the built-environment integrates from a low carbon, well-being and social diversity perspective. We are ideally placed to add value to clean energy and a low carbon sustainable future through early engagement and integration within the whole-life process.

We believe the engineering services sector should be seen as a lynchpin sector of the UK economy that enables other sectors to connect, produce and grow. We therefore look forward to being able to set out, with the support of Government, a sectoral deal that, among other things, can remove the segregation between construction and operation of the built-environment in order to achieve innovation, higher productivity, better value and growth.

UK devolution, in order to achieve localised growth and investment has been shown to be key to regional success, but we would also support Government ensuring that a commonality of approach by ‘public sector as a client’ is able to drive productivity and efficiency and prevent devolution resulting in inefficiency and waste for both industry and public sector alike.

Doing so will provide certainty for business, and help ensure that unnecessary ‘red tape’ and ‘blue tape’ (unnecessary business on business cost) do not inhibit investment and growth.

An industrial strategy should not exist in isolation. Each industry exists to serve a market but it also has an economic and social contribution, and other impacts; therefore an industrial strategy must underpin the UK’s social and economic strategy (its sustainability strategy). Provided strategies align and clearly inter-connect there should be little in the way of tension at strategic level.

A robust industrial strategy covering built-environment should for example link:

- Industrial skills requirements with education policy;
- Industrial capabilities with homes, national educational and health, energy, transport, waste and infrastructure requirements;
- The requirement for the built environment to underpin social diversity, inclusion and well-being, e.g. indoor air quality.
• Together with capacity and productivity investment to be inherently linked to the maturity of digital disruption in commerce, e.g. Government has already acted as the catalyst for the built-environment to utilise the digitally disruptive benefits of BIM, for example by requesting its use in major public sector contracts.

Government will need to a) translate the strategy and perceived consequences of global issues such as Brexit, emerging markets etc., into UK domestic strategy and b) assist in the translation of the consequences of domestic social, economic and sustainability policy into growth opportunities for each industry. This will create stability, certainty and market confidence.

Finally, for our market to grow, the sector will need open routes into overseas markets to maintain the UK’s position as one of the intellectual leaders in engineering innovation in the built-environment.

3. Are the right central government and local institutions in place to deliver an effective industrial strategy? If not, how should they be reformed? Are the types of measures to strengthen local institutions set out here and below the right ones?

The Government currently has, as a minimum, the following bodies in place which affect the built-environment sector:

• National Infrastructure Commission (NIC)
• Crown Commercial Services – Mystery shopper
• Small Business Commissioner
• Government Digital Services – G Cloud & Crown Market Place
• Infrastructure and Project Authority
• Construction Leadership Council
• Government departments - BEIS, Cabinet Office, Treasury, DCMS, DCLG, Transport.

This highly fragmented approach to governance and public sector client demand in the built-environment sector illustrates that economic, fiscal, commercial, procurement, small business, major infrastructure, construction and environment are all treated as separate policy areas. This can lead to isolated policy and initiatives, which could be resolved by being strategically aligned to an overarching policy plan and by being digitally integrated.

Much of the problem above is caused by the sectoral division referred to above between the construction component (10% CapEx) and the operation and maintenance components (80% OpEx) of the UK built-environment.
We therefore recommend that the National Infrastructure Commission is given responsibility for strategy and delivery of both governance and public sector client demand within the built-environment – a built-environment PPP leadership and delivery authority. It should take responsibility for oversight of the various initiatives (whether coming from government or regional/local institutions) and work closely with the Cabinet Office on public sector procurement. Without centralised coordination bringing both construction and operation together to drive value-led procurement the sector is unlikely to be enabled to deliver the prosperity and growth envisaged by the industrial strategy.

The NIC would, through agreement with industry and a sector deal, need to set targets, monitor and drive progress and ensure that sufficient progress is maintained, but we believe the costs of such an initiative would be more than off-set by the savings to Government, operating as a ‘smart client’.

There is little doubt that the challenge of localism and devolution is to harness the benefits without incurring the obvious disadvantages of a de-centralised/fragmented approach. The second enabler required from Government for industry and commerce to be prosperous is therefore, stable policy and consistent investment plans delivered at a local level, with coordination from the aforementioned centralised body for the built-environment.

Industry often struggles with inconsistent localism from a highly fragmented and often autonomous public sector client base. Government is to be congratulated on the initiatives it has taken so far in establishing stable digital operating platforms in order to make itself a smarter client to industry, but it will need to explore how public sector beyond central Government can be encouraged to utilise the same digital architecture to drive better commercial behaviour in the market place, and achieve productivity savings as well as innovation.

4. Are there important lessons we can learn from the industrial policies of other countries which are not reflected in these ten pillars?

Yes - One key lesson from the UK and other countries (such as Germany) is that industry absolutely requires long-term commitment and policy certainty, beyond the electoral cycle. As mentioned above for industry and commerce to be prosperous stable policy and consistent investment plans are required. The engineering services sector comprises 99% SMEs who struggle to invest and plan in order to deliver better value for clients if overarching policy is too unstable to be reliable. The short to medium term effect of unstable policy is inaction and market stagnation.

Previous Governments have taken a generic view across industries, benchmarking each industry against the other, but not attempting to understand the peculiarities of each industry.
For example, construction is often compared by Government to aeronautical, automotive or manufacturing, yet, in reality the built-environment by means of:

• the fragmented market,

• disaggregation of the value of the process within the supply chain, and

• the bespoke nature of most products of the built-environment process means that construction and the engineering services sector are inherently different from the aforementioned industries. Therefore, each industry requires a unique mixture of Government interventions and enabling initiatives in order to facilitate industrial implementation of a strategy. We accept that a sector deal would allow us as the built-environment sector to define what a built-environment strategy leading on energy, skills, innovation and research, should look like.

UK construction has experienced multiple industrial, construction-specific and interim strategies and energy policies which have repeated, but then simply reset, the challenges which industry is required to meet. The direct impact of this is a loss of confidence by the market in the Government’s ability to maintain continuity and clarity of industrial strategy.

In order to get pan-sectoral buy-in to an industrial strategy the private sector requires a strategic dialogue with Government provision of consistent continuity of facilitative Government support (outlined above), under a sector deal in order to create and adapt business and investment models with a common trajectory towards meeting those strategic aims.

Australia, New Zealand, Ireland are examples of where an industrial strategy in a construction context has taken a more interventionist approach in order to reconcile economic differences in order to facilitate greater economic output and productivity.

The German system of Government, driving commercial trading integrity through fines for poor payment behaviour in breach of regulation collected through its taxation enforcement infrastructure, has been extremely effective. This is an example of how strategically joined up regulation, policy intervention and enforcement are able to drive more collaborative commercial behaviour for the sake of macro-economic productivity within fragmented industry sectors.

Australia and New Zealand are also examples of where Government acknowledges its combined role as a municipality and a strategic partner client by taking a far more prescriptive approach within joined up regulation and enforcement/administration to avoid uncertainty and cost which it acknowledges it will only pay for through the resulting product price. The price of municipal administration and enforcement is off-set by the regulatory cost.

Last year’s Government commissioned Farmer Review (to which we were contributors) highlighted that the Building Control Authority in Singapore works closely with the built-environment sector to raise productivity levels and to radically change the design and construction delivery process.
The Farmer review highlighted that the Singapore Authority launched the Construction Productivity and Capability Fund to provide incentive schemes for encouraging workforce development, technology adoption and capability development in Singapore’s built-environment. Given the dependence upon the built-environment sector to invest in the technologies for improving energy efficiency and reducing carbon emissions, the UK government could consider the Singapore model as an exemplar driver for change.

5. What should be the priority areas for science, research and innovation investment?

Technologies that can transform the built-environment through investment in research and innovation in our sector are split between process technologies i.e. tools and subject technologies (those that we purchase, design, supply, install and maintain).

The return on investment for both is that cost is off-set by disproportionate productivity efficiencies and carbon reduction.

Carbon Reduction (enabling and new technology) – UK traditionally takes a low risk approach to innovation purchasing from other markets once it has established its credibility. e.g.

- Solar thermal inc. DX systems to supply very low carbon heat this area has been largely overlooked and yet is making a contribution in other countries.
- Solar PV – this technology had very strong takeup while incentivised by government, and could be looked at again in the context of energy storage.
- Learning controls to take optimisation of building energy further and not to rely on humans.
- Continuously commissioning systems – connected systems that can self-adjust to seasonal differences and use patterns.
- The above two technologies require two enabling technologies;
- Low cost sensors that can be easily installed and powered locally, perhaps these will be printed on to sticky paper with inductive coils or TEG as a power source.
- Low cost, reliable, stable and effective data connectivity systems for remote sensors. This enables the gathering of data from all items in a system and connection to the control system.
- Energy storage – by incentivising energy storage and demand side response (DSR) technologies, and addressing regulatory barriers faced by energy storage, this could bring about £7 billion worth of savings to consumers (according to a recent parliamentary report), and improve the UK’s energy security at the same time. Government could also develop a storage procurement target to help put the UK at the forefront of this technology.
• Thermal storage – high volume solutions – this is the enabling technology that can make a real difference as it means demand and use can be separated. This leads to a reduction in primary fuel used, balancing of demands for efficient buildings and the trading of heat energy in the power markets.

• Modular and offsite - rather than a technology per se this is a technique and integration ability. The skills and knowledge base needs to be built up as do enabling technologies such as BIM/3D CAD, design in advance of construction, advance manufacturing techniques that allow high output of standard or bespoke product.

• Productivity Increase (tools)

• Smart, living contracts and information handling systems that allow greater workflow with less errors, lower risk, greater data granularity and ‘big data’ trends allowing us to model better performance. Digital becomes the answer to provide a resolution to the current requirement to balance commercial/management activity with site productivity; e.g. commercial management –v- engineering innovative sustainable solutions.

• Online and digital compliance tools to reduce errors and hours in administration thus increasing productivity on sites and in business process. The scale and complexity of this issue would require development by consortia in an open-source platform, perhaps by providing the underlying tech platform that is then tailored for each use case.

• Improved technical standards - current standards are too “safe”, difficult to interpret, difficult to access and are often overlooked. Many of them need to be researched and adjusted to fit that research output, interpretation and implementation guides need to be written and access portals provided. The R&D knowledge is an engineering problem, the guides and access can be provided through high quality trade associations.

• Data led design – demand performance as a success metric, this reduces the installed capacity allowing more buildings to be built with the current supply chain. This would require insurance products to support data lead design construction.

• Speed up the adoption of digital design tools such as 3D CAD, as currently licences are expensive and so is the required training.

The R&D tax credit system is currently used to encourage investment in original innovation. However, this does not then extend to the purchase of that innovation by the market to which it introduced. Extending the tax credit system would allow innovation a greater opportunity to reach critical mass and find venture capital exploratory finance.

In September 2016 a team from Pinsent Masons, Costain and Cambridge University published a report, entitled ‘Innovation in the Supply Chain’. This concluded that unless there was a radical change in procurement practices the scope for innovation in construction supply chains was extremely limited. In the majority of cases a design “solution” is put forward as a basis for inviting tenders that are invariably driven by the lowest price. Within this context there is little incentive for the supply chain to innovate especially in relation to devising the most optimum design solution for the whole life of the structure.
A significant amount of wasted cost and effort in construction is incurred in making the given design “solutions” work once construction is commenced. We are encouraged that Pillar 5 aims to “use strategic government procurement to drive innovation and enable the development of UK supply chains.”

Research carried out in 2013 for (then then) BIS by University College London – UK Construction: An economic analysis of the sector – listed a number of reasons for the low levels of innovation in the sector as being:

• high level of fragmentation with limited collaboration;
• procurement negatively impacting upon collaboration;
• sub-optimal knowledge transfer and lost learning points (there is little carry over from one project to the next of innovative processes);
• lack of awareness of benefits of innovation and lack of market uptake;
• limited access to finance and risk-averse attitude to innovation.

The report also concluded that innovation in construction often tends to be achieved through regulatory standards and health and safety legislation. However, we would again highlight that until construction and operation within the built-environment are different though they should be highly connected. Innovation and its benefits will be severely stifled by the current structure of the market.

6. Which challenge areas should the Industrial Challenge Strategy Fund focus on to drive maximum economic impact?

Innovation in both productivity and smart technology in: whole-life Engineering, Procurement, Construction & Maintenance systems, i.e. driving innovation over the whole-life of the built-asset not either side of the construction and operating divide.

• output specification orientated requirements based on the whole-life performance of the built-asset.
• smart contracts, that link price to risk over the construction and operating period of the built-asset against output specifications – the smart/living contract is where the digital contract becomes part of the integrated project/facilities management system throughout the life of the asset.
• use of single source EPCM contractors that do not require design hand over from consultant to contractor to operator/maintainer
• use of FEED principles to reduce design error, rework and unreliability

A built-environment leadership and delivery authority (e.g. undertaken by the National Infrastructure Commission) could enable this investment.
7. What else can the UK do to create an environment that supports the commercialisation of ideas?

If we regard innovation as the commercialisation of ideas, the UK needs an agile, modern system for allowing fast-track protection of ideas by individuals or groups with fiscal relief and incentives to allow rapid investment and growth.

Step change is required to meet productivity increases and to meet carbon and other key UK targets. Government is to be congratulated on the initiatives so far introduced including, Knowledge Transfer Network, Innovate UK and the Catapults (digital and future cities) network and funding hubs. These have already marked a step change in the Government attitude towards fostering innovation for growth. The next step is to create frameworks for:

Easier protection of intellectual property especially in collaborative multi-party project and agile environments where intellectual property is not clear at the scoping/development phase.

Support for SMEs in promoting, protecting and investing in new ideas, i.e. the commercialisation process.

Communication of success so that the perceived high risk of funding and driving innovation is reduced to low risk.

This is where the Industrial Challenge Strategy Fund should work with a built-environment leadership and delivery authority to have a prime focus as a means of fiscal incentivisation.

8. How can we best support the next generation of research leaders and entrepreneurs?

The overall built-environment lacks a strategic perspective on research and innovation. Resources have historically often been wasted on uncoordinated research and study efforts that are never fully applied in the delivery and operation process to make the built-environment more efficient and cost-effective. The best support that can be given to research leaders and entrepreneurs interfacing with the built-environment is to have a strategy that prioritises research needs with a body to network innovation platforms and drive the implementation of strategy as well as attract appropriate research funding.

Our sector would aim to lead on alliancing with innovation hot-house programmes where venture capital can supply positive disruption, and would expect public equity investment, GDS mentoring and regulatory fast-track protection to enable scale and growth of appropriate innovation.
9. How can we best support research and innovation strengths in local areas?

Through Local Enterprise Partnerships, coordinated by the expanded National Infrastructure Commission.

10. What more can we do to improve basic skills? How can we make a success of the new transition year? Should we change the way that those resitting basic qualifications study, to focus more on basic skills excellence?

The move towards the transition year and the announcements on T Levels is a strong positive step towards raising the level of basic skills for those that may benefit from a vocational career. A sectoral/Government alliance would be able to ensure that the T Levels are good enablers.

Support for apprenticeships within the built-environment is not helped by the negative perspective given by schools who may be unaware of the career prospects of the vocationally educated (good careers with economic and social mobility built in) or not prepared to tackle the potential negative perspectives of parents and guardians. We are currently collaborating with industry partners to work with schools and colleges to help ‘sell’ the built-environment sector to the aforementioned groups.

The availability of apprenticeships remains a challenge for many SMEs, who require support and guidance, and confidence in obtaining new commercial opportunities, in order to take on new apprentices.

A focus on 16-18 year old education is vital to the above, and we will work with government to achieve an effective policy in this area.

11. Do you agree with the different elements of the vision for the new technical education system set out here? Are there further lessons from other countries’ systems?

Currently one concern is whether small and medium sized firms, who are not liable to pay the Apprenticeship levy, will have access to the training funding they require. This is because if larger firms utilise the entire proceeds of the Apprenticeship Levy for their own training, it is not clear how SMEs will be funded for their own apprentice training.
It is also noted that employer partnerships have been (or will be) set up to develop the new qualification requirements. The trade associations and related bodies representing employers in the built-environment have produced over many years a sophisticated multi-disciplinary skills focused framework for skills development in their respective trades. It’s worth noting that engineering is dominated by small and micro employers, so the role of trade associations is vital to ensure their voice is effectively heard.

12. What skills shortages do we have or expect to have, in particular sectors or local areas, and how can we link the skills needs of industry to skills provision by educational institutions in local areas?

We have extensive labour market intelligence data that informs us of a looming skills shortage in the built-environment sector and intelligence on what is being developed. According to data, this could affect up to half the firms across the sector.

However, leaving the EU is unlikely to exacerbate this problem, with over 9 in 10 firms in our sector stating that they do not have a strong reliance on EU workers.

Under a beefed up National Infrastructure Commission, based on a sector deal, we would envisage that the best solution is that industry bodies, skills partnerships and trade associations should be enabled by Government to work with the funding agencies or other incentives/awareness programmes, to specifically match industry employers with demand, with capable providers who can supply, to new entrants.

On a regional basis, LEPs have a vital role to play in bringing together employers and job and growth enablers, such as local authorities, in order to identify the skills they need in their localities. This regional approach links on a strategic level to plans for sectoral skills growth across the country on a national level.

13. How can we enable and encourage people to retrain and upskill throughout their working lives, particularly in places where industries are changing or declining? Are there particular sectors where this could be appropriate?

Engineering, the Built Environment, and Building Services in general is a rapid innovator by product and technology, Construction less so (except in the field of Off Site and 3D printing).
Through renovation and refitting technology and services in existing and new built-assets we in the built-environment are improving the efficiency and consumption, as well as the quality of lives of those persons living and working in them.

A major barrier to skills acquisition in construction - including regular upskilling - is the extent of self-employment in the industry. 40% of construction contracting jobs are carried out by self-employed people (compared to 15% over the whole economy). Furthermore the industry is dominated by small businesses. According to ONS statistics up to 89% of firms employ one person. This question should be addressed by:

Measures to tackle false self-employment (the Farmer Review recommends an increase in the proportion of PAYE employees across the supply chain).

Trade associations in the built-environment sector (and other industry sectors having specific skills needs) are developing the most effective provision for continued learning and training drawing on existing models (i.e. utilising CPD point recognition on existing skills card offerings).

14. Are there further actions we could take to support private investment in infrastructure?

Yes – ensure that the business case and economic impact of infrastructure projects are fully developed and tested in open source platforms, before projects are given authority to proceed.

The UK could also enable certain infrastructure projects to be self-funding long term, e.g. toll roads.

One of the primary causes of poor quality and higher cost operation and maintenance in the built environment is that minimal finance is devoted to the pre-construction and planning stages of the built-environment because of the perceived delay to financiers on return on investment, and the high risk to investment during the construction period.

One of the strengths of the private finance initiatives during the 1990s/2000s was the level of integrity testing and business re-modelling that took place to ensure the robust probity of the investment model of projects within the built-environment.

With the perceived failure of Private Finance Initiative in the last decade, the UK has been hesitant of any unestablished funding innovation. Yet venture capitalism, PFI and public private partnerships are all methods of crowdfunding – specifically as they often involved consortia lending support. Other methods include:

• Reward crowd funding
• Charity crowdfunding
• Equity crowdfunding
• Open source crowd funding
• Crowd financing/P2P lending
• Angel investors

• Venture capitalism

In 2013, Google invested $125 million in a form of P2P lending. In 2014 in the US, P2P lending totalled about $5 billion. In 2014 in the UK, P2P platforms lent businesses £749 million, a growth of 250% from 2012 to 2014, and lent retail customers £547 million, a growth of 108% from 2012 to 2014. In both countries in 2014, about 75% of all the money transferred through crowdfunding went through P2P platforms.

Crowdfunding websites helped companies and individuals worldwide raise US$89 million from members of the public in 2010, $1.47 billion in 2011, and $2.66 billion in 2012 — $1.6 billion of the 2012 amount was raised in North America. In 2012, the industry was projected to grow to US$5.1 billion in 2013 and to reach US$1 trillion in 2025.

A May 2014 report, released by the United Kingdom-based The Crowdfunding Centre and titled 'The State of the Crowdfunding Nation', presented data showing that during March 2014, more than US$60,000 were raised on an hourly basis via global crowdfunding initiatives.

If Government forced the level of transparent investment integrity testing, other forms of infrastructure investment would undoubtedly be more forthcoming from a wider stakeholder audience such as retail, transport, education and philanthropic investors.

In addition, a communications plan to raise awareness of alternative sources of financing would lower apprehension around funding mechanisms that are not purely bank lending or equity investment – this should be based on promoting the most of success stories and role models/young entrepreneurs.

15. How can local infrastructure needs be incorporated within national UK infrastructure policy most effectively?

We suggest that local and regional public and private bodies (including retail, education, health etc.), should be encouraged to work together to develop their regional delivery plans via Local Enterprise Partnerships. The regional plans can then be accommodated by a built-environment leadership and delivery authority within the National Infrastructure Delivery Plan.
16. What further actions can we take to improve the performance of infrastructure towards international benchmarks? How can government work with industry to ensure we have the skills and supply chain needed to deliver strategic infrastructure in the UK?

Encourage and/or facilitate, with relevant Trade Associations such as the ECA/BESA, job swapping to spread learning – specifically between those involved in the construction –v- the operation and maintenance of infrastructure assets. This has been effective especially where the swap occurs over contractual lines, for example between a consultant engineer and contractor engineer.

The built-environment sector is fully capable of delivering more and better infrastructure for less. Any review aimed at improving the quality, cost and performance of our infrastructure is to be welcomed.

The solution to delivering more and better for less is to utilise, at the front-end of delivery, the know-how and experience that exists in the supply chain who are at the forefront of delivery, but who are contractually segregated by the supply chain structure away from the procurement process.

The Treasury’s view is that 80% of cost savings can be achieved at the planning and design stages – rather than during construction and operation/maintenance. Moreover all key decisions regarding whole-life risk should be made at the outset of the procurement process.

The cost of construction is often excessive because the construction process is forced to work with inadequate planning and design. This method of minimal upfront investment at feasibility stage undermines the value proposition of whole-life procurement and encourages layers of process waste, including lowering build quality leading to excessive operating/maintenance costs.

Integrated Project Insurance (IPI) is a method currently being trialed on a public sector project in the West Midlands, which has the aim of reducing costs by up to 20% by appointing the design and construction delivery team from the outset to agree planning and design solutions and, after engaging in a robust risk management process, to agree with the client (who is both constructing and operating the built-asset) a cost plan. The cost plan should reflect the most cost efficient and effective way of delivering the clients’ whole-life success factors – including where appropriate any revenue plans on completion. The plan is then insured so that, in the event of any cost overrun, the policy is triggered. The policy meets the cost of any overrun subject to an excess which is paid in pre-agreed proportions by the team members. All team members are committed to removing process waste and, thus, reducing costs throughout delivery.

The IPI option would be particularly useful in attracting private sector investment because the IPI policy underwrites the cost plan.
In achieving this objective there may be another option. The Plan for Growth published by HM Treasury and (the then) BIS in March 2011 referred to the fact that the built-environment “would benefit from radical changes to the planning system”. The Growth and Infrastructure Act 2013 helped to facilitate infrastructure development. We suggest that the Act be amended to require that construction infrastructure projects (over a certain value) are fully designed with a risk register prior to seeking planning consent. This would, then, encourage whole-life costs to drive construction quality, which would in turn necessitate early supply chain involvement.

A built-environment leadership and delivery authority PPP, underpinned by a regional framework (inclusive of relevant trade associations) would also enable localised LMI to indicate localised skills and labour levels where infrastructure projects create regional hotspots of demand over the medium term period.

17. How can we drive the adoption of new funding opportunities like crowdfunding across the country?

The evolutionary development of G-Cloud into Crown Market place could also enable public sector investment opportunities through open source investment platforms which fall within the crowdfunding arena. Contracts Finder combined with forward projection initiatives such as Construction Pipeline could enable Crown Market place to open this avenue to crowdsourced public/private crowd project initiatives.

In the private sector a collaborative approach between innovation ‘hot houses’ and the catapult networks involving a combination of traditional investment, crowdfunding, crowd sourcing, P2P lending and venture capitalism could enable a highly accessible competitive investment market.

A communications strategy to ensure these funding mechanisms are not seen as new or untried through success stories would be necessary to embed the system within commercial consciousness.

18. What are the barriers faced by those businesses that have the potential to scale-up and achieve greater growth, and how can we address these barriers? Where are the outstanding examples of business networks for fast growing firms which we could learn from or spread?

The main barrier to growth is lack of working capital and funding options.
In the built-environment the average is a 2% profit margin which is, in the current industrial climate, expected to be redirected as working capital into investment in people, technology and training, in order to maintain innovation and growth.

Even when re-investment of profit does occur, the risks of growth can be extreme; clients can withdraw contracts and the risk of not being paid or facing extended terms gets proportionately worse as contract size increases.

The major barrier for SMEs is the lack of payment transparency and security.

As the public sector accounts for 40% of our client base, we would seek leadership through the adoption of digital payment project platforms linked to digital procurement processes on all public sector procurments. These provide greater transparency, speed, lower risk, reduced disputes, greater data derived project improvement lessons and granularity, for all participants within the supply chain – the foundation stones of payment performance reporting, G Cloud, Crown Market Place, Contracts Finder and Construction Pipeline are already in existence, the challenge is next generation integration saving both Government and industry time and money through automation.

Trade associations already provide high quality business networks and support services and a sector deal would need to recognise trade associations as an ideal method of low cost enhancement and enablers of growth for both market incumbents and start-ups.

19. Are there further steps that the Government can take to support innovation through public procurement?

The key issue for public procurers of construction – to encourage innovation – is to engage the delivery (not the management) element of the supply chain (such as the engineering inputs) as early as possible in the procurement process. This is likely to produce considerable cost savings, especially in markets which are highly fragmented like the built-environment.

The Building Down Barriers initiative, the Defence Estates Organisation found that early supply chain involvement produced savings of up to 69% on labour and material costs. To support this all public projects should have a risk register to which input has been made by the supply chain.

Replacement of strategic frameworks (which by definition discourage innovation) with dynamic purchasing systems would also allow greater more fluid involvement of SMEs who are more inclined to innovate. Dynamic purchasing systems would also allow for value for money as opposed to lowest price procurement.

Digital contract/payment/project management would also allow performance to be mapped and to inform procurement in order to drive better behaviour from both a cost and innovation perspective.

Procurement based on target cost pricing and risk registers would allow joint responsibility for failure as well as success.
Further actions are required:

- All contracts – throughout the supply chain – should be smart contracts where risk is negotiated against price.

- Project performance data should digitally link to procurement.

- There must be a greater drive to ensure that initial pre-qualification is standardised and fully digitised, and that framework/project-specific pre-qualification is risk based and fully digitised throughout the built-environment sector and informed by past project performance.

20. What further steps can be taken to use public procurement to drive the industrial strategy in areas where government is the main client, such as healthcare and defence? Do we have the right institutions and policies in place in these sectors to exploit government’s purchasing power to drive economic growth?

The right mechanisms are in place via Crown Commercial Services but, as previously referenced, they need GDS to assist with digital integration of these foundation blocks (e.g. Crown Market Place, G Cloud, payment performance reporting, Contracts Finder, Construction Pipeline, etc.).

Thus, if the right mechanisms are in place, once integrated appropriately, Government needs to ensure large scale institutional procurement bodies such as NHS, Defence and MOJ, are required to use the existing Government architecture of smart public sector procurement systems in order to reap the reward of investment in this area – large scale public procurers cannot be allowed to circumvent these systems in the interests of autonomy, since they will cause added waste and bureaucracy.

21. What are the most important steps the Government should take to limit energy costs over the long-term?

The built-environment sector is at the forefront of know-how and investment in renewable energy, energy efficiency, and thus operational energy cost and carbon reduction. On new build, particularly, this know-how and investment is critical in bridging the gap between design expectations and building performance.
Efficient UK energy storage and distribution will greatly reduce the cost of energy delivered to the customer. As such, the development of new technologies in energy storage and low carbon transport and heating should be prioritised. This can be achieved from both the demand and the supply sides.

The capital allowances system should be overhauled to maximise the incentive for installing state of the art energy efficient systems and also to rationalise the existing framework. For example, there is considerable overlap between the existing capital allowances framework that extends to integral features (e.g. hot and cold water systems, electrical systems) and the enhanced capital allowances (ECAs) system that encourages environmentally beneficial technologies. Moreover there is a widespread lack of knowledge amongst clients/customers on the extent of the coverage of ECAs. Again this problem is easily resolved through smarter procurement.

Where there are projects involving new build, fitting out or refurbishment the design team – with input from the engineering supply chain – should seek to develop the building engineering services design so that it maximises for the client/customer the availability of ECAs.

22. How can we move towards a position in which energy is supplied by competitive markets without the requirement for on-going industry?

Removal of subsidies and tax breaks for fossil fuels would allow all energy and fuels to have an absolutely level playing field.

The following actions are suggested:

For our sector…

• Deliver required engineering and technical training
• Facilitate reliable, auditable product performance data
• Meet industry performance standards
• Facilitate product interoperability, quality and safety

For Government…

• Ensure legal and standards compliance
• Provide market incentives to those who comply
• Support the production of flexible standardisation, that allows innovation
• Actively support the increase of engineering and sustainable technical design skills
• Remove unnecessary regulatory and fiscal, market barriers
• Deliver reliable policy and legislation to enable planning, investment and innovation.

• Incentives for energy efficiency – e.g. through modification of local council taxes – could be provided to owners and occupiers (especially those in SMEs) of properties in the private commercial and industrial sector to carry out an audit and retrofit programme.

• Expertise and advice should be made available to property owners by not-for-profit advisory bodies to enable them to calculate reliable payback (ROI) figures for returns from investment when investing in renewable technologies.

23. How can the Government, business and researchers work together to develop the competitive opportunities from innovation in energy and our existing industrial strengths?

The Industrial Strategy Green Paper re-confirms the Government’s commitment to meeting legally-binding ‘carbon budgets’ set out in the Climate Change Act, and makes the point security of supply has largely been addressed through Capacity Auctions and Contracts for Difference, plus the decision to proceed with ‘Hinkley Point C’.

The strategic aims of the Green Paper would be further consolidated by a decision to proceed with the Swansea Tidal Lagoon project, which would offer significant support to virtually all of the beneficial outcomes that are aspired to in the Green Paper.

ECA/BESA would welcome the opportunity to contribute to the government’s proposed “long-term roadmap to minimise business energy costs”. The roadmap should focus on the most cost effective way for the UK to achieve not just the Carbon Budgets, but innovation, growth and productivity.

Businesses within the built-environment sector have led in making a substantial investment in renewable technologies, including the required design, installation and maintenance skills.

To deliver innovation the focus should be on:

• Improving our procurement processes to bring in engineering contracting firms at the front-end of design and planning since they will often be equipped with the requisite cutting-edge expertise (bridging the performance gap between the design intent and out-turn energy/carbon performance of the facility).

• Revising the capital allowances regime to ensure that it is “fit for purpose” in incentivising improvements in renewables, storage and energy efficiency.

• Improving payment security (and, thereby, improving their chances for accessing finance) so that engineering SMEs can increase their investment in energy technologies and know-how.

• Having a research strategy for the built-environment that prioritises research in improving energy efficiencies and other cost and carbon reductions.
24. How can the Government support businesses in realising cost savings through greater resource and energy efficiency?

As referred to above the Singapore Authority launched the Construction Productivity and Capability Fund to provide incentive schemes for encouraging workforce development, technology adoption and capability development in Singapore’s built-environment.

Given the dependence upon the engineering sector in construction to invest in the technologies for improving energy efficiency and reducing carbon emissions, the UK government could consider the Singapore model as a driver for change.

An expansion of the R&D tax credit system, as previously referred to, to allow SMEs the ability to utilise tax relief in order to invest in technology enable resource would also enable greater growth in the medium term.

Government will also need to renew its low carbon agenda so that relief and incentives are available for low carbon initiatives in the built-environment, ensuring that procurement is not simply driven by lowest price, and that value for money incorporates the principle of energy efficiency.

25. How can the Government and industry help sectors come together to identify the opportunities for a ‘sector deal’ to address – especially where industries are fragmented or not well defined?

We have already stated that the built-environment exists on a fragmented delivery structure and usually applies a model whereby construction is usually separated from ongoing performance, service and maintenance (FM).

We strongly believe that any sector agreements must not perpetuate the wholly unsatisfactory divide between the basic ‘construction’ of the built environment (which typically involves just 10% of asset costs) and the actual operation of the built-environment (typically 80% of the cost). Government’s role, to truly invest in the productivity, sustainability and growth agenda in relation to the built environment, will need to bring together basic construction activity, with building engineering and maintenance activity, and allowing both to interact at the design stage.

ECA and BESA are currently collaborating with other industry bodies – namely BEAMA, BSRIA, CIBSE, CIPHE, EDA, FETA and SNIPEF – on a suitable sector-wide approach. We would be happy to update government on progress with this sector partnership.
26. How can the Government ensure that ‘sector deals’ promote competition and incorporate the interests of new entrants?

A sector deal within the engineering services sector should promote a level playing field for competition through a process of “badging” or accrediting firms (using existing recognitions wherever possible) as having the required levels of technical and operational capability. Trade associations could look to provide new entrant mentoring and guidance on commercial management and growth opportunities.

27. How can the Government and industry collaborate to enable growth in new sectors of the future that emerges around new technologies and new business models?

The industrial strategy should set out how Government will enable and facilitate sector deals whereby in exchange, sectors provide leadership on drivers and challenges including innovation and digitisation – a sector deal in the built-environment would include:

- understanding the future roadmap/pipeline of our sectoral workload in meeting UK requirements;
- fostering innovation and creativity in solution finding;
- achieving higher productivity rates, to remain globally competitive;
- embracing the digital revolution;
- creating intelligent links between demand, long-term skills planning and vocational/academic/educational institutions and facilities;
- embracing an engaged, inclusive and diverse workforce in order to foster capability, creativity and capacity.

We ask Government, within its industrial strategy, to clarify and confirm its role in enabling, leading and facilitating the strategic aims in each industry. This should involve outlining the process of fiscal, legislative, policy and commercial leadership measures, designed to instigate implementation of such a strategy. With clarity and certainty of Government policy and strategy, the private sector can plan business investment and growth as part of a robust overarching strategy.
UK Government has the following tools available to allow it to influence an industry in order to achieve effective implementation of an industrial strategy:

• Fiscal incentives or disincentives;

• Legislative frameworks;

• Policy initiatives;

• Commercial leadership – public sector intelligent client; and,

• Regulatory enforcement measures.

We welcome the Government's Innovate UK and Catapult initiatives which are facilitating centres of creative innovation and entrepreneurialism to accelerate the maturity of sectoral research and development, i.e. these initiatives are having a demonstrable impact by acting as catalysts for industrial thought leadership.

UK Government is traditionally hesitant to intervene in markets. However, where markets are fractured to the point whereby they preclude productivity, innovation and the ability of an industry to meet strategic industrial demands, Government intervention should be viewed as an imperative, in order to facilitate both UK client value but also UK competitiveness in the global economy.

In certain markets, such as the built-environment, the market is structurally fractured. Each project has an average of 70 sub-contract packages and each package involves 4-5 tiers of supply chain. In other words the industry is enormously fragmented and the financial value of the product of the construction process is enormously disaggregated throughout the lower levels of the supply chain.

The disproportionate economic bargaining power of the parties at each level of the supply chain leads to inequitable commercial positions and practices which over time have a macro-economic effect of producing a system whereby the lower tiers of the supply chain, which comprise the smallest of the businesses involved, in supplying materials and labour long before they are paid, effectively bank-roll the industries output.

The effect of a highly fragmented multi-layered supply chain is that, competition perpetually drives down price, especially in times of reduced demand. This has the long term effect of reducing margins, which in turn reduces working capital and therefore the capacity to train, invest and innovate. The added consequence is also that in order to make construction commercially viable the cost is drive down through lowest quality to match competitive price.

With low levels of liquidity the construction market is high risk in terms of insolvency and as a consequence funding options and initiatives are further reduced to the high risk nature of the market.

More importantly the construction industry exists within wholly separate business models to those of the property market which inherits and operates the assets during their lifetime. The result of which is that the cost of the construction process are often lowered in favour of increase costs of operating the built asset, i.e. there is little value for money in construction.
In markets such as construction which are structurally at odds with themselves and where commercial interests collide, Government intervention is essential to facilitate implementation and achievement of an industrial strategy and sector deals which necessitate behavioural change and/or market disruption.

28. Do you agree the principles set out above are the right ones? If not what is missing?

The consultation advises that an industrial strategy is a “vision for a modern British industrial strategy that does not repeat the mistakes of the past”. Moreover it is “…a vision to support, strengthen and develop our different industries, and to get all parts of the country firing on all cylinders.” In this regard, “the objective is …..to improve living standards and economic growth by increasing productivity…”

The concept that basic ‘construction’ also encompasses the actual use of the built environment is flawed. To avoid “repeating the mistakes of the past’, ‘construction’ needs to be seen as a part of the overall UK built environment, but working in partnership alongside our own building engineering services sector.

As noted, the Government has identified 10 pillars it believes essential to drive this industrial strategy. The Developing Skills pillar would be reinforced with a bold promotion of effective employee engagement policies and practices.

To survive and thrive, businesses must be agile, flexible and innovative. To meet this challenge one of the key ingredients in today’s knowledge driven economy is for businesses to listen to their employees and use their insight. Employee voice is good for business and employee engagement impacts positively on the ‘bottom line’.

There are multiple sources of robust evidence in endorsement of the proposition that the engaged workforce is good for business – including 2009 Government commissioned Macleod Report, Engaging for Success. The high profile findings of correlation between employee engagement and bottom line results gave a clear message. The Report concludes that leadership, line management, employee voice and integrity are key enablers of engagement and that “the correlation between engagement, well-being and performance is repeated too often for it to be a coincidence.” The Report argues that if the principles and practices associated with employee engagement were more widely taken up by employers the associated benefits in employee well-being and in turn employee performance could be realised leading to a positive impact for UK competitiveness and performance overall.

Enhanced collaboration between employers and workers, using appropriate mechanism and existing models, can facilitate positive employee engagement. This could potentially be achieved through specification within the procurement process.
In addition to the Macleod Report there is the authoritative Workplace Employee Relations Survey (2011) and the Harvard Business Review (2013). There are also the commentaries and observations of key institutional players in the 'world of work', namely ACAS and CIPD in various publications. See for example, “Creating an Engaged Workforce,” CIPD (2010). This report confidently records, “engagement is clearly associated, both in this report, and in other studies, with high levels of performance,” hence, “engaged employees perform better.”

If higher engagement is associated with higher performance, then low levels of engagement can be costly to the UK economy in terms of lost performance. Gallup suggests that in 2008 the cost of disengagement was between £59.4 billion and £64.7 as the Macleod Report advises.

Just as the business case for digital innovation is that automation is a fraction of the cost of current process, the unambiguous business case for positive employee engagement is the increased productivity which follows.

29. What are the most important new approaches to raising skill levels in areas where they are lower? Where could investments in connectivity or innovation do most to help encourage growth across the country?

Investment in connectivity and innovation through the catapult system sponsoring national and affiliated global networks which inspire young and multi-disciplinary collaborations would do much to inspire productivity through innovation. This in turn would lead to UK industrial growth.

30. Recognising the need for local initiative and leadership, how should we best work with local areas to create and strengthen key local institutions?

Many of the trade associations in our sector have established and well-run regional networks allowing for full participation from member businesses. There should be greater scope for local authorities, LEPs and government agencies to work closer with trade association and other business networks to encourage local skills and labour demand/management and encourage investment and innovation.
31. What are the most important institutions which we need to upgrade or support to back growth in particular areas?

We need to upgrade the Construction Leadership Council, and Infrastructure Projects Authority to include the private and public sector client operation requirements. If Government will not support a combined construction and operation/maintenance/service sector approach then it, as 40% of the client demand in the UK, is not simply remaining agnostic but driving the problem of low quality construction and high cost maintenance which delivers low value for money. A beefed up National Infrastructure Commission can help with delivery.

Government should also continue to support the Innovate UK and Catapult systems to connect further into commerce and encourage and drive innovation for growth.

We have already seen a directly positive impact of the devolved method of policy making in the devolved administrations and are looking forward to further devolution within the Northern powerhouse and Midlands engine.

However, any strategic framework embracing devolution must also seek to maintain continuity and consistency of operating systems otherwise devolution only seeks to increase geographic operational overheads adding unnecessary waste to the construction and maintenance processes.

32. Are there institutions missing in certain areas which we could help create or strengthen to support local growth?

As suggested above, a new-look National Infrastructure Commission could, on the basis of a strategic public private alliance allow sectoral leadership combined with Governmental facilitation and input, across the built-environment – including housing, infrastructure and with other built assets in retail, health, education, office etc. This would enable a whole-life strategy combining construction with operation and maintenance to drive true value for money within the sector for its biggest client, i.e. the public purse.

As intimated previously, any sector deal and leadership body as described above, would need to be underpinned by a regional hubs informing it on all manner of issues, including skills, demand for infrastructure, technology and innovation and growth networks.

The cost of these would be subsumed within existing regional/devolved government and by replacing existing leadership bodies within the construction silo.