ENGINEERING THE FUTURE:

A TEN-POINT PLAN TO OVERCOME THE UK’S CONSTRUCTION & INFRASTRUCTURE SKILLS GAP

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Laing O'Rourke is the UK’s largest privately owned construction, engineering and manufacturing enterprise, employing over 9,000 people across the UK. We are involved in delivering some of the most high-profile projects, including Crossrail, Hinkley Point C, Manchester Airport Terminal 2 redevelopment, the Northern Line Extension and Tideway.

We have produced this report to shine a light on some of the critical skills issues facing our industry and to offer some practical, deliverable recommendations to help close the skills gap in the construction industry.

This skills gap is one of the biggest challenges facing the construction and infrastructure sector. However too much of the focus to date has been on analysing the underlying problems of the skills gap with insufficient emphasis on the solutions necessary to bridge it.

The skills gap is critical to the UK’s economy. We have a well-documented skilled labour capacity problem, which has deteriorated significantly since the onset of the financial crisis, and which could stifle the country’s productivity and competitiveness. This is especially true since the UK already has an ageing and over-stretched infrastructure.

Successive governments have recognised the urgent need to improve our airports, energy infrastructure, housing, rail, roads and water networks. Encouragingly, Theresa May and her government have already indicated that they want to push upgrade plans further and faster.

But if the long list of projects identified in the government’s National Infrastructure Delivery Plan is to be achieved, we need to urgently attract, retain and upskill our workforce to address skills shortages and productivity issues.

As an industry, we have an image problem. The industry is still viewed as “low skilled”, when in fact new technical trades require advanced digital skills and an ability to read and interpret big data using Building Information Modelling (BIM). The development of these relatively new skills will be a fundamental future requirement as stereotypical low-skilled labouring becomes less in demand.

These new skills are essential for delivering the UK’s future infrastructure as projects such as Hinkley Point C are now designed, planned, procured and delivered in a digital environment. For example, Laing O’Rourke manufactured a large proportion of the Custom House Crossrail station structure in our off-site manufacturing facility at Explore Industrial Park in Nottinghamshire. Such innovative off-site delivery techniques require a workforce with the skills to operate in a more controlled, safer, and higher assurance environment and the development of these resource pools will be fundamental to the delivery of future UK construction and infrastructure projects.

Educational institutions, industry, industry bodies and government need to collaborate to attract and accelerate the pipeline of skilled people entering the sector with the necessary engineering and construction skills to meet the UK’s future requirements.

To this end, and in order to address the UK’s skills shortage, we recommend the following ten-point plan.

EXECUTIVE SUMMARY
1. Flex the government’s planned Apprenticeship Levy and reduce delays to approval of ‘Trailblazer Apprenticeship’ standards

2. Create regionally focused skills pipelines

3. Increase availability of Russell Group university standard part-time degree apprenticeships

4. Review options for career transitioning apprenticeships

5. Introduce GCSEs and A-levels in Design, Engineer and Construct (DEC) disciplines

6. Foster collaboration between industry and government to deliver a broader range of improved careers advice for construction and engineering

7. Commit the industry to measurable improvements in diversity

8. Seize the opportunity of the new Department for Business, Energy and Industrial Strategy

9. Support the creation of a single construction and infrastructure skills body

10. Facilitate the ongoing professional development of a directly employed workforce
THE CHALLENGE: MATCHING ASPIRATION TO DELIVERY
A vibrant construction and infrastructure sector is a key indicator of a healthy and functioning economy. The construction industry is crucial to the UK as it directly creates, builds and maintains the workplaces in which businesses operate and flourish, and the homes and environments in which our population live. It also provides the physical connection between different sectors such as travel, finance, technology, housing, schools and hospitals, which deliver the services that society needs.

The contribution that the construction industry has made to the UK economy remains vast. In 2015, the construction and infrastructure sector added £90 billion to the UK economy, or 6.7 per cent of the UK’s total GDP. It employs over 2.1 million people across the UK.

This contribution is set to grow further as the UK continues on its planned journey to upgrade huge swathes of its ageing infrastructure, as the country faces looming capacity crunches in aviation, rail, energy, road and housing.

It is also widely accepted that poor infrastructure is a significant drag on productivity – a problem this government and its predecessor have rightly sought to address. With uncertainty around the investment horizon following the vote for Brexit and the subsequent change of political leadership, many have called for government investment in infrastructure to be intensified. It should be welcomed that since taking office the new Prime Minister has committed herself to a much more active industrial strategy. Encouragingly, the net result of all of this political will has already resulted in actual delivery, with businesses like ours witnessing a high quality pipeline of projects. However, a busy project pipeline also brings challenges as well as opportunities. Delivering economic infrastructure requires a productive and skilled workforce, and as yet the UK has not evolved far enough from a low-skilled construction workforce to a highly skilled engineering and digitally enabled resource pool.

 Indeed, the industry as a whole faces a massive challenge to find new skilled workers to deliver future projects. With extensive growth forecast for the sector, Infrastructure UK estimates that the pipeline will create demand for an additional 250,000 jobs in construction and over 150,000 engineering construction workers by 2020.

Last year the Employer Skills Survey highlighted that construction employers are now struggling to fill one in three construction vacancies, up from one in four in 2013, because they cannot source or attract people with the right skills.

Meeting this challenge will require vastly improved collaboration and coordination between government, industry, industry bodies and the education sector. As well as the sheer numbers involved, the construction and infrastructure sector also faces a number of well-known issues when it comes to attracting, recruiting and retaining resources with the right skills.
An industry with an image problem

Almost as high-profile as the construction ‘skills gap’ itself is the sector’s perceived unattractiveness to new recruits. This is particularly pertinent among school and college leavers, graduates and female workers.

Only 11 per cent of people who responded to a recent YouGov poll said they thought the construction sector was ‘exciting’. Overcoming such perceptions will be crucial to meeting the industry’s skills challenge.

The work practices themselves also suffer from a poor reputation. In the same YouGov poll, the vast majority of the 2,000 people surveyed said they would never consider a career in the construction industry. A further 41 per cent of respondents named it as one of the sectors least likely to require higher/further education, and 68 per cent saw the work as ‘strenuous’, with 58 per cent describing it as ‘dirty’.4

An education system which undervalues construction and engineering

These attitudes perhaps echo a lack of focus within the UK education system on vocational skills and STEM subjects. Recent research shows that while 52 per cent of students sitting their A-level equivalent in France choose to specialise in sciences, only 25 per cent of all A-level students in England take two or more STEM subjects at A-level5. The German education system also has strong routes into vocational careers. This has clearly translated into well-respected engineering and manufacturing jobs. Clearly, more needs to be done and more can be done in UK schools and colleges to get pupils and students interested in engineering and construction.

A lack of coherent strategy

The problems within education may be symptomatic of a lack of coordination of construction policy-making at a government level. At the time of writing, the Department for Business, Energy and Industrial Strategy has just been established, but up until now a coordinated government approach with the power to implement meaningful policies that drive real value into construction engineering has been lacking. The establishment of this new Department presents an opportunity to address this issue.

SOURCE


5. A.T. Kearney Tough Choices, (February 2016) https://www.atkearney.co.uk/paper/-/asset_publisher/dVxv4Hz2h8bS/content/7390824
A lack of planning transparency which properly matches the supply and demand for skills

At present, lists and reports documenting what projects are required across the country are numerous and varied. However, there are limited commercial details to help construction firms resource plan for the future. In order to send the right signals to both industry and training providers, it is important that local administrations are encouraged to undertake more centralised regional planning. In many cases this type of planning is currently either incomplete or non-existent at present.

Brexit could make the problem much worse

Finally, the impact of Brexit has the potential to dramatically increase the scale of the challenge facing construction employers.

Laing O’Rourke, and undoubtedly many of our competitors, already draw resource from across Europe to fill shortages in certain skills. The relationship that the new government negotiates with the EU will have a significant impact on our ability to find the right people with the right skills. Tighter regulation of migration that does not account for the particular employment dynamics of specific sectors could undoubtedly constrain construction and infrastructure activity in the UK, particularly if urgent action is not taken to reform our approach to skills and training.

For those who work in the construction and infrastructure sector the challenges outlined here will be nothing new. The skills gap in the sector, and the challenges faced around the industry’s attractiveness to new recruits have all been covered extensively in various reports and in the media. As a result, the remainder of this report does not seek to restate the obvious, or talk up the scale of the challenge.

We focus on practical solutions, and the recommendations contained in this report make specific requests of government, educators and the wider construction industry. By taking forward all of these ten steps we believe that the industry will be in a much stronger position to recruit and train the right people with the right skills, and help the government deliver the infrastructure improvements the UK economy needs.
A TEN-POINT PLAN FOR CLOSING THE SKILLS GAP
1. Flex the government’s planned Apprenticeship Levy and reduce delays to approval of ‘Trailblazer Apprenticeship’ standards

The recent profile-raising of apprenticeships by government has undoubtedly increased the profile of such entry level schemes. However, the government must ensure that the apprenticeships policy is designed to meet employer needs, rather than simply just being about creating as many apprenticeships as possible.

The flagship Apprenticeship Levy provides a strong opportunity to meet employer needs. If funding from this levy is directed in a targeted manner to the apprenticeships required by industry, then this initiative could be extremely positive.

Similarly, the government’s Trailblazer reform was a welcome move to introduce employer-led qualification standards, although urgent action is required to ensure this scheme properly delivers.

In the construction sector it is estimated that there will be a need for between 120 and 150 apprenticeship qualifications. To date, only three apprenticeship standards are ready for delivery. Our own experience provides valuable insight into why the numbers of standards ready for delivery are so low. Getting standards formally approved is extremely difficult, with periods of up to two months to secure feedback.

The policy guidance has changed frequently, often during an application process, which effectively renders the relevant standard null and void. As a result, we have found it very difficult to develop standards, despite having put significant time and resource with a number of our partners into their creation.

Each apprenticeship also requires a registered organisation to carry out the end point assessment, giving both the apprentice and employer surety that the qualification has been awarded after rigorous assessment, to the required quality and to the approved standards.

There are currently apprentices on programmes, working towards approved standards but without an assessment organisation in place. Unless resolved, this means that the apprentice will be unable to complete their programme and gain their qualification.

If early progress around Trailblazer Apprenticeships is to be maintained, it is vital for the government to immediately review the sign-off and assessment processes, significantly reducing the time taken to approve standards and ensure that a registered assessment organisation is in place. Faster processing times of applications would be a simple, effective way of re-energising the talent pipeline into the industry.

**Recommendation for government:** Urgently collaborate with industry and industry bodies in order to review the ‘Trailblazer Apprenticeship standards sign-off and assessment process, and to deliver against agreed timescales for getting standards approved.

2. Create regionally focused skills pipelines

There is currently a significant disparity between the pipeline of project lists published by central and local government bodies, the businesses who will potentially deliver them and the education and training providers that need to train the required individuals.

The government’s National Infrastructure Delivery Plan 2016-21 sets out a detailed list of projects to be completed over the next five years. Beyond this, however, the next level of detail needed at a regional level to inform industry, educational and training providers is inadequate for resource forecasting and training purposes.

In practice this can often lead to an oversupply of certain trades in regions where the skill requirements do not match the requirements of the local projects. By way of example, often local education providers are training large amounts
of NVQ-qualified bricklayers, when actually the project pipeline shows a local demand for steel-fixers. Matching supply to demand in a more coherent way would ensure that projects are delivered more effectively, utilising locally trained people. Equally as important, it would also mean that people have the best chance of getting a job in their local area upon completion of their training.

**Recommendation for industry:** To work closely with local authorities to roll out models such as the North West Construction Sector Pipeline Analysis to other areas / regions and improve the matching of the demand for skills with supply.

3. Increase availability of Russell Group university standard part-time degree apprenticeships

There is a need for central government to support alternative educational models such as part-time degree apprenticeships, in order to widen the number of routes available into the industry. In vocational subjects required for construction and infrastructure, a mix of classroom learning and on-the-job training is recommended to improve the outcome.

Laing O’Rourke’s school and college leaver programme is an innovative example of this, in which we provide a company funded, accredited day-release HND and/or degree in each individual’s chosen area of interest while working as a full-time Laing O’Rourke employee. This five-year programme encourages continued learning throughout the individual’s career on an earn and learn basis.

Take-up of such schemes by universities is limited, with only a small number of institutions currently offering the required curriculum. There are currently no part-time Engineering or Quantity Surveying degrees at any of the 24 research universities that make up the Russell Group. This may well be due to the negative stereotypical image of vocational subjects. However, if we are to bridge our skills gap and deliver future infrastructure UK PLC projects, education providers need to be encouraged to be much more progressive in their learning models, and support the requirement for attraction of high calibre students into the sector.

**Recommendation to government and to universities:** The government to work with industry to understand their requirements and to incentivise universities to offer high quality part-time degree apprenticeships. Target Russell Group universities to offer courses by 2018.

4. Review options for career transitioning apprenticeships

As a medium-term initiative, the government should look closely at the apprenticeship process for those seeking to re-train to pursue a new career path. The process for those looking to retrain is extremely difficult. Subject to review and approval, the government’s planned Apprentice Levy could provide funding for such initiatives.

Conventional skills policy generally focuses on attracting school or college leavers and university graduates into the industry. However, the potential pool of resources presented by those seeking to retrain is significant. A high number of careers, such as the military, have complementary transferable skills that are useful for success in the construction and infrastructure sector.

In this regard we would be keen to work with government in order to explore possible retraining initiatives for individuals and help mitigate the construction and infrastructure skills gap.

**Recommendation for government and industry:** To review the government’s planned Apprenticeship Levy rules and develop frameworks for career transitioning apprenticeships and work with industry to develop a broader range of career transition options.

**Case Study: North West Construction Pipeline Analysis**

Through our work in the North West, we have partnered with the Greater Manchester Chamber of Commerce and the City Council to deliver a series of projects. One such project involved mapping the region’s skills gap using the North West Construction Pipeline Analysis.

Published in 2015, the report calculated that the value of the construction project pipeline in the North West was £29 million up to 2018. The report also found through detailed labour analysis, that labour demand was set to reach 184,064 on site by March 2015, with shortages in the majority of skilled trades including civil engineering operatives and glaziers.

Following this, we worked with local authorities to create similar data mapping schemes for the London and the South East, demonstrating how collaborative working with local organisations can be effective in creating accurate, regional data which maps the skills gap.
5. Introduce GCSEs and A-levels in Design, Engineer and Construct (DEC)

Getting school and college students interested in engineering requires fundamental change.

In this regard, we recommend that the Department for Education (DfE) supports the development of new GCSEs and A-levels in Design, Engineer and Construct (DEC), through the evolution of the existing DEC curriculum.

The current DEC curriculum combines traditional academic and projects based learning; teaching students key skills such as Building Information Modelling (BIM) techniques and how to design, specify, and deliver sustainable building projects.

Whilst the existing DEC curriculum is delivered at level one, two and three, with levels two and three nominally equivalent to GCSEs and A-levels and qualifying for UCAS points, many universities still do not treat such courses as equivalent.

Moreover, at present, only 42 schools out of a possible 3,601 state-funded secondary schools in England offer the DEC curriculum, which is supported by industry partners, including Laing O’Rourke. With the support of the Construction Industry Training Board (CITB), Laing O’Rourke currently sponsor four UK schools to deliver the DEC curriculum.

The government has the opportunity to work with the industry to create GCSEs and A-levels in DEC and incentivise schools and colleges to offer them to pupils and students. This would boost the appeal of the sector to schools, students, parents, universities and higher education institutions and educate people about the positive reality of a career in modern day construction and engineering. Our economy needs technical skills to function, and such an initiative would support bringing the STEM related DEC course curriculum into main-stream education.

Recommendation for government, industry and educators: Collaborate to introduce GCSEs and A-levels in more secondary schools

6. Collaborate with industry to deliver a broader range of careers advice for construction and engineering

Alongside parents, teachers and schools play a crucial role in advising pupils and students on their academic choices and future career options. Yet according to the Sutton Trust, only 14 per cent of schools believe they have the necessary resources to provide impartial and insightful careers advice.

There is clearly an opportunity here for government and industry to work together to provide improved careers training and resources for schools, and make greater provision for visits by external careers advisers. For the construction and engineering sector specifically, the attraction, recruitment and retention of good quality teachers in STEM related subjects is essential. We also encourage greater industry support through school partnerships across the country, thereby raising awareness and providing linkage for work placement experience and mentoring.

Recommendation for government: To work with industry to review and improve provision of careers advice and look to expand the numbers of trained external careers advisers

7. Commit the industry to measurable improvements in diversity

The construction and engineering sector needs to attract a more diverse workforce. At the moment, talented female, ethnic minority and LGBT candidates are turning away from an industry which is predominantly male, white and middle-aged, with a reputation for being low skilled.

At present only three per cent of the workforce is estimated to be from an ethnic minority background, and only nine per cent of engineers in the UK are women – the lowest proportion in Europe. It is also clear that recent efforts to boost female participation in engineering in particular have not made a material difference, as the percentage of young women studying engineering and physics has remained virtually static since 2012.

To help meet this challenge industry needs to introduce an improved system for target setting, monitoring and measuring its progress in this area to assure continual improvement. Furthermore, enhanced investment in outreach programmes, in internal employee engagement and HR review procedures is required to ensure that employment practices are fair and equitable. Participation in industry-wide campaigns also offer companies the opportunity to learn and share best practice.

Recommendation for industry: Laing O’Rourke will commit to lobbying broader industry support for open and transparent annual reporting on workforce diversity, including targets for year-on-year improvements as demonstrated via these results.
8. Seize the opportunity of the Department for Industrial Strategy

While the government has a strong focus on infrastructure, our experience suggests that it lacks a focal point which takes sole responsibility for the needs of the whole construction industry. Engineering and construction are often considered indirectly in terms of outcomes such as house-building and infrastructure projects across a myriad of government departments, agencies and public bodies, meaning that projects such as the data mapping of skills, where they exist, lack specific coordination for the industry.

The creation of the new Department for Business, Energy & Industrial Strategy (BEIS) should revive impetus here. In particular, these new responsibilities should allow the Construction Leadership Council (CLC) to take a more holistic view, coordinating and driving industry change - supporting a recommendation made in the recent Farmer Review.

This should only be regarded as a first step given the lack of coordination cannot be solved by BEIS alone. Solving the skills gap will require close cooperation between BEIS, the Department for Transport (DfT) and the Department for Education (DfE). As a result, we recommend that the CLC should not just take advantage of the new enlarged BEIS department, but that it could also coordinate with other relevant departments and industry bodies that impact construction.

Finally, the CLC, with strong support from BEIS, should strongly champion the industry’s concerns on Brexit highlighting domestic investment and skilled migration as the two biggest challenges for the construction and infrastructure sector.

Recommendation for government: To ensure that CLC is able to take advantage of the new enlarged BEIS, and also to engage with DfE and DfT. The CLC should also champion the industry’s concerns on Brexit within government

9. Support the creation of a single construction and infrastructure skills body

In the Construction Industry Training Board (CITB), the construction and infrastructure sector currently has a strong focal point through which its skills requirements can be organised.

However, we envisage an even greater role for the CITB. The body could be merged with the Engineering Construction Training Board under a common leadership, and we support its efforts to take a greater leading role in setting and assuring standards. We also support the CITB in fostering collaboration in an industry notable for its dislocation between major players and key stakeholders regarding the approach to skills.

This would help the CITB and the wider sector keep up to speed with the huge changes transforming the construction and infrastructure sector, as we utilise new digital and manufacturing technologies and methodologies to become a professionalised sector of highly skilled technicians.

Recommendation for industry: To promote the enhanced role of the CITB, making it an industry leader in setting and assuring priority skills standards, and encouraging enhanced collaboration between all stakeholders

10. Facilitate on-going professional development

At present, the construction and engineering sector is united in recognising the scale of the skills shortage, and the need to find a solution. However, many companies have not adapted their employment model or working culture to prioritise the attraction and retention of valuable employees.

At Laing O’Rourke, securing the next generation of skilled workers is considered business critical and is a pivotal aspect of our strategy. Likewise, our direct employment model is mutually reinforcing: our employees enjoy continuity of work, benefits and investment in their ongoing development and we benefit from an engaged and retained workforce. This model and culture is focussed, sustainable and long-term.

We are currently training all of our supervisors to Institute of Leadership & Management (ILM) level three, and we hope to lead the industry in evidencing assurance that all of our front line supervisors are competent and trained to supervise. Similarly, we are engaging lifting technicians and training them through an apprenticeship that we developed at the National Construction College.

Recommendation for industry: To position skills and employee development at the core of business strategy and to adopt a direct employment model to boost sustainability and employee engagement

SOURCE

IN SUMMARY

Laing O’Rourke is ready to play its part in closing the skills gap.

We have outlined that meeting the challenge will require positive engagement and collaboration between government, industry, industry bodies and the education sector and we believe that by progressing our practical ten-step plan, the industry will be in a much stronger position to recruit and train the right people with the right skills, and help the government deliver the infrastructure improvements the UK economy needs.

There are huge gains to be made in the construction and infrastructure sector: a ‘win win’ for government, industry and educational and training providers. It is time we focussed on what we want to achieve in the UK, and collectively produce an efficient and targeted system to match our ambitions and deliver opportunity to aspirational people, in a dynamic, forward looking industry.

Our report sets out an ambition and is designed to seek further engagement, discussion and debate.

If you would like to join the discussion, or if you have enquiries regarding this report, please contact our corporate communication team at

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