

All Party Parliamentary Group for Excellence in the Built Environment



Building on Brexit

How leaving the EU must drive
modernisation and training in the built environment

July 2017

Acknowledgements

We would like to thank the witnesses who gave oral evidence and the organisations that provided written submissions to the Inquiry, as well as those that took seats on the panel.

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Contents

4	Chairman's foreword	3
5	Executive summary and recommendations	
10	Section 1: The Inquiry	
10	1.1 About the Inquiry	
11	1.2 Members of the Commission	
11	1.3 Secretariat	
12	Section 2: Introduction: why Brexit needs to be an opportunity for change	
15	Section 3: The need to stabilise the existing workforce	
15	3.1 The importance of EU workers to construction	
18	3.2 Stopping skills falling off the edge of a cliff: recommendations around post-Brexit arrangements	
22	Section 4: Attracting and training a skilled domestic workforce for a modern construction industry	
22	4.1 The problems and challenges of attraction and training	
27	4.2 Recommendations to create and attract and train a domestic skilled workforce	
30	Section 5: Future-proofing, productivity and enterprise	
30	5.1 The need for change	
33	5.2 Recommendations to future-proof the sector and make it more productive and enterprising	
36	Section 6: Concluding remarks	
38	Witnesses who gave oral evidence	
39	List of all written submissions	

Chairman's foreword

4



Oliver Colvile

Member of Parliament and chairman of the All Party Parliamentary Group for Excellence in the Built Environment during the course of the Inquiry

On 23rd of June 2016 the UK voted to leave the European Union. In March 2017, the Prime Minister triggered Article 50 starting the two-year negotiation process to implement that vote.

The UK's construction industry relies on EU builders to help it deliver the much needed one million new houses over the lifetime of this Parliament – to 2022. To achieve this target, the construction industry needs trained builders from outside the UK.

The industry is already facing a skills crisis exacerbated by a sharp decline in its workforce. Additionally, as a result of the workforce ageing, we can expect 430,000 people to have retired between 2010 and 2020.

On top of this, Brexit is likely to see an end to the free movement of people from within the EU, which could see 194,000 workers denied access to the UK.

This report has been produced by the All Party Parliamentary Group for Excellence in the Built Environment following a five-session Inquiry, which I chaired. It aims to review the challenges that will face the construction industry and offers some constructive suggestions on how Government and the industry should ensure that these million new homes can be delivered.

Having lost my seat in the 2017 election, I am back off to commercial work to put some of these recommendations into action.

A handwritten signature in blue ink, appearing to be 'O Colvile', written in a cursive style.

Oliver Colvile

Executive summary and recommendations

The consequences of Brexit could be disastrous for the construction industry and, in turn, the economy if swift action is not taken.

Plans set out by Government to drive productivity and the economy are centred on the need to build new infrastructure and new homes.

But if access to skilled EU workers is cut off before the sector is able to train a domestic workforce, plans for the £500bn pipeline of new work including in excess of one million new homes by 2022, airport expansion and HS2 will not be deliverable.

Abrupt labour bans would also impede the industry's export potential, which is worth billions every year to the economy. Professional services from across the sector including architects, engineers and cost consultants rely on foreign professionals to help fulfil this workload. As the country readies to build up its export drive, expanding our markets is paramount, yet without access to EU workers this could be in jeopardy.

The Construction Industry Training Board (CITB) forecasts the industry will grow by 1.7% each year between 2017 and 2022, which will create an extra 179,000 jobs over five years.

Yet in the face of this projected growth, construction is already facing a skills shortage, exacerbated by the prospect of a sharp decline in its workforce. An ageing workforce means that between 2010 and 2020 we will have seen 430,000 people retire.

More pointedly, we are facing a scenario in which more people are set to leave the industry than enter it, even without Brexit. In his review published in October 2016 and commissioned by the Department for Communities and Local Government, Mark Farmer, the CEO of Cast Consultancy, claims that for the housebuilding sector, nearly five times more workers exited than entered it in 2016. At that rate, by 2020, housebuilding alone would have a deficit of 200,000 workers – again, that is without the impact of Brexit.

The additional impact of Brexit could see access denied to an estimated 194,000

workers that currently come from the EU 27. That's the equivalent to the workforce needed to build 16 Crossrails. Housebuilding in London is completely reliant on overseas workers. Seven out of 10 of workers on Barratt sites in the capital, for example, are non-UK passport holders.

It is therefore vital that the industry is given enough support as we leave the EU, and does not end up on Government's 'low priority' list in the Brexit negotiations as was reported to be the case earlier in the year.

Construction is one of the UK's biggest industries, employing 2.6 million people and its £100bn plus annual turnover makes it bigger than the aerospace and automotive industries combined.

However, construction has to be aware it is competing for Government resources alongside dozens of other sectors and professions and it needs to fight its corner.

Also, as it was made plain during our evidence sessions, there is a growing awareness that construction needs to skill up and modernise and Brexit gives added urgency and impetus to this agenda. We have seen slow productivity growth in the last two decades and if the Government's industrial strategy is to succeed that needs to be tackled urgently. The challenges ahead will certainly be tough – but too much is at stake for it to fail. It is essential that Government and industry come together to make the sector SAFE (Stabilise, Attract, Future-proof and be more Enterprising).

That is:

- **Stabilise:** Government stabilises the existing workforce by announcing existing EU migrant workers are able to remain in the UK and then putting in place transitional arrangements for a period of time so that access to foreign workers does not fall off a cliff edge (discussed in Section 3).
- **Attract:** Government and industry work together to put in place a seamless training infrastructure which ensures we attract and train the right talent across the built environment spectrum that is needed to deliver a high-quality output (discussed in

Section 4).

- **Future-proof and Enterprise:** Industry must step up to the plate and become future proof, more productive and enterprising by harnessing digital technologies and offsite construction and also by encouraging disruptors into the market (discussed in Section 5).

Across the board, there are huge structural barriers that have to be overcome. But there were plenty of positive messages in the evidence we heard, to suggest that industry has an appetite to change, by:

- marrying training with innovation and new methods of construction;
- attracting the next generation in numbers not seen in decades;
- being at the cutting edge of developing game-changing technologies such as robots and 3D printing; and advanced integrated working through the adoption of building information modelling.

However, the industry is too fragmented to achieve this in the quick timescale needed and we are, therefore, recommending that a new single body be made responsible for built environment skills and training, and attracting new people across the spectrum of the built environment, from the trades to the professions.

Such a body is vital, if we are to achieve the huge step change required in training and building up a more inclusive and skilled domestic workforce.

This will take time and prolonged effort and needs Government support through sector-friendly policies, focus, its own procurement programme and, in some cases, financial incentives and tax breaks.

It is essential, for example, that Government maintains its commitment to the planned infrastructure projects, providing the sector with a continued and visible pipeline of work that will provide a level of certainty and confidence for companies to invest in training, research and development. Public projects also need to avoid a 'race to the bottom' procurement mentality and ensure

that firms that do offer proper training and greater social value are rewarded.

We also need joined up thinking to stop disjointed programmes jeopardising the good work the industry is doing. The introduction of the apprenticeship levy seems to have been particularly ham-fisted and there are question marks over how it will work with the Construction Industry Training Board (CITB) levy, which urgently need addressing. Not surprisingly, there are concerns in the sector about the efficiency and affordability of having two levies. Our view is that having two levies does not make sense and is unsustainable. We would like to see them brought together, in some way, as one.

Over the next few years, it would be a miracle if the road to Brexit is not strewn with bumps and barriers that create blips in the economy, which could easily knock Government and the sector's resolve. But locking in construction to the heart of the industrial strategy and recognising its importance would harden that resolve to skill up and modernise.

And we would suggest our recommendations are incorporated into the sector-deal agreement that is being drawn up between Government and the Construction Leadership Council as part of the new industrial strategy.

Although the challenges are tough, the potential rewards for adequately resourcing a key sector in our economy are huge. And we should always bear in mind that construction, more than any other sector, provides a valuable pathway for social mobility.

Significantly, skilling-up the sector will also afford the opportunity to cement and extend our status as a global leader in the field of technical construction and design expertise. There can be no more important time to do so than when we are seeking to reposition ourselves on the global political and economic stage, as a dynamic and self-sustaining economic powerhouse.

Recommendations

Stabilising

We recommend that Government stabilises the workforce by taking the following actions:

1. Ensure at the earliest opportunity an unconditional and permanent right to residence and work for existing EU nationals employed in UK construction.

Neither employers nor employees can afford a continuing period of uncertainty or a sudden loss of capacity, as output would fall immediately and the construction industry would find itself in a desperate place. Implementing such a measure would help stem the rising flow of EU nationals currently leaving the UK.

2. Develop a workable skills-based migration system that provides access to overseas workers.

There is a strong case for adding a number of roles in the built environment to the Shortage Occupation List and Government should work with construction organisations to pinpoint those roles.

We would envisage that there needs to be a transitional period of, say at least five years, and more likely 10, during which the migration system provides more flexibility to allow domestic skills to increase. But the industry also needs long-term clarity and certainty on the migration arrangements for the future.

As witnesses pointed out, employers need a system that is streamlined, does not add to costs and which is not as unwieldy as the current Tier 2 visa system. We are concerned that the £2,000 fee being proposed to charge employers for employing migrants will be passed through into increased construction costs.

3. Secure reciprocal arrangements to allow global construction companies to move their staff to different locations to deal with peaks and troughs of workload.

The new migration system would also need to allow for straightforward intra-company

transfers, which are now an integral part of the business model of specialists. This means that reciprocal access, without introducing burdensome bureaucracy, is essential.

Construction is a global industry and needs to be able to move staff around the world for knowledge transfer, in order to deal with the fluctuations of specialised workload and harness export opportunities.

4. Provide temporary visas for 'posted' EU workers employed by overseas companies on specific contracts.

It has become commonplace in the UK construction industry to use imported materials that are then installed by the suppliers' specialist workforce. These so-called 'posted' workers are individuals sent by an employer in another EU member state to work temporarily in Great Britain. Posted workers are distinct from migrant workers because they are already employed in the member state where their direct employer is established.

It is not unusual for building components to be supplied and installed by overseas suppliers and their workers; curtain walling is one example. Again, any migration system post Brexit should be able to maintain posted worker status and provide temporary visas.

5. Allow non-UK construction students opportunities to remain and work in the sector for a set period of time following the completion of studies.

While Government has stipulated that students would not be allowed to stay after completing their studies, we believe that graduates studying for qualifications that form an integral part of the skills on the shortages list should be exempt for at least the transitional period. Allowing students from disciplines in the built environment to stay in the UK to gain professional qualifications would provide one of the easiest ways of ensuring UK construction firms have access to skills. Overseas students trained by UK firms bring with them fresh thinking, as well offering future networking opportunities for UK services providers when

the students return to their home countries.

6. Ensure, more generally, that the built environment sector is given the priority and support it deserves and that befits such a vital and important industry in the course of Brexit negotiations and withdrawal from the EU.

7. As part of Brexit negotiations ensure that there remains continued mutual recognition of qualifications for professionals working in the built environment.

In the longer term, the UK should seek to forge new trade agreements and mutual professional qualification agreements with non-EU countries, in order to provide the UK with access to a wider talent pool.

Attracting and training a skilled domestic workforce

8. We urge the industry to get behind an overarching ambition to attract, train and retain a greater domestic workforce, with skills aligned to more modern ways of working.

9. We need industry, with strong support and assistance from Government, to set up and shape a pivotal skills body for the entire built environment, to provide strategic oversight across the spectrum from the trades to the professions.

This body would:

- Set out a strategic direction for skills and training.
- Determine and agree the skills, courses, apprenticeships and education and training programmes needed today and for the future.
- Oversee new standards.
- Control a ring-fenced unused apprenticeship levy (see 10).
- Provide a strong influencing link to education.
- Become the ‘sales channel for the built environment’, helping industry come together to promote careers in construction, increase diversity and sell a new image – embracing the roles of technology and digitalisation.

We are particularly concerned that the lack of coherency in agreeing new apprenticeship standards is holding back apprenticeships from being put in place. In the short term we would like to see professional bodies, trades associations, industry and academia come together with the Institute of Apprenticeships to establish as a matter of some urgency a consensus on standards befitting the various trades and professions and have this signed off.

10. Having two training levies in the sector is unviable and confusing. We would like to see the CITB levy and the apprenticeship levy consolidated and simplified into one and the money ring-fenced so it is spent within the built environment to attract and train new talent with the skills for today and the future.

There also needs to be more flexibility over how levy money is spent. For example, to:

- Create a new pathway at a post-graduate level for non-cognate graduates wanting to transition into the construction sector with appropriate levels of higher apprenticeship funding (this works well for increasing diversity in the sector but costs £30,000 so can be prohibitive for smaller firms).
- Provide bridging training for work-ready skills to those that need it.

Future proofing and enterprise

11. Government has recently reaffirmed its commitment to a strong industrial strategy and is planning to form sector deals with key industries. We advocate that increasing productivity must be at the heart of the construction sector deal brought about by greater training and moves to use more modern and digital construction.

Spending more money on research and development will be crucial and we would hope that the construction industry wins a large share of the £1bn R&D challenge fund on offer. We would certainly endorse the recommendation of the Farmer Review that firms come together to share R&D – and make resources go further for the general good and competitiveness of the industry.

12. The construction industry needs to keep up the momentum in the harnessing of building information modelling and that requires Government to reaffirm its commitment to mandating level 2 building information modelling on centrally funded Government projects and ensure this mandate is enforced.

The Inquiry

1.1 About the Inquiry

In some parts of the country the building industry has almost become synonymous with migrant workers, most recently Eastern Europeans. Therefore, investigating the impact of Brexit on skills was an obvious subject for the All-Party Parliamentary Group for Excellence in the Built Environment to investigate. Having enough skilled people is vital if the industry is to gear up to build more new homes and deliver the range of new infrastructure planned, as part of creating a modern and productive country.

This Inquiry looked at the extent to which the construction industry relied on migrant workers, both at trades and at professional level, and what the industry should and could be doing to mitigate the impact of Brexit and create sustainable local skill sets to meet its needs in the future. It became apparent that it would be impossible for the industry to respond quickly enough to fill the gap left, if access to migrant workers from the EU was suddenly turned off. Our report, therefore, divides into what we would like to see happen in the short term – an ‘ask’ to Government as it were – to help in a transitional period to stabilise the skilled workforce we have. And secondly, what the industry needs to be doing to play its part in skilling up and modernising, to create a world class industry for the future that delivers our needs at home and competes with the best overseas. Again, it will need Government help to achieve that.

The findings of the Inquiry are based on written evidence that was submitted, as well as what we were told during our oral sessions and on extra evidence we invited. All appropriate organisations from the construction sector and its professional bodies were invited to submit evidence, and supplementary oral evidence was requested from a number of them. Written evidence was submitted in the late autumn of 2016, and five open sessions, where oral evidence was presented, took place between December 2016 and February 2017.

The bulk of the work of the Inquiry was carried out before the general election and

was then reconvened after 8 June 2017.

We have drawn on and echo a number of reports that are covering similar territory - in particular, *Modernise or Die*, written last October by one of the members of our Commission of Inquiry, Mark Farmer, which makes extensive recommendations for far-reaching reforms in the sector to address the skills crisis.

Finally, one of the group members, Lord Stunell, is leading a review in the House of Lords into the impact of Brexit on the construction industry and we have drawn on evidence he has gathered through that work.

Our Inquiry was confined to the impact of Brexit on skills. It did not extend to the impact on the import and export of construction products, nor regulations, both of which we appreciate also need to be considered carefully in the wake of Brexit if our major infrastructure and housing building programmes are not to be jeopardised through rising costs and delays.

The All Party Parliamentary Group for Excellence in the Built Environment Commission of Inquiry comprises members of both Houses of Parliament, senior members of the construction professions and key influencers and decision makers in other sectors of society.

1.2 Members of the Commission

Oliver Colvile

Chairman of the APPGEBE and Member of Parliament during the course of Inquiry

Lord Richard Best OBE DL

Chairman, The Property Ombudsman

Jo Churchill MP

The Earl of Lytton FRICS

Deputy Chairman, APPGEBE

Helen Hayes MP

Vice-Chair, APPGEBE

Lord Andrew Stunell

Peter Bonfield OBE

Chief Executive, Building Research Establishment

Tony Burton

Director, Construction Industry Council

Amanda Clack

President, Royal Institution of Chartered Surveyors

Mark Farmer

Founding Director and CEO, Cast Consultancy

Harvey Francis

Group HR Director and Executive Vice President, Skanska

Professor John Nolan

Chairman, Construction Industry Council

1.3 Secretariat

Graham Watts OBE

Chief Executive, Construction Industry Council

Denise Chevin

Rapporteur and report author

Kamila Tomaszewska

Construction Industry Council

Introduction – why Brexit must be an opportunity for change

Brexit could be disastrous for the construction industry and put the delivery of new homes and a raft of new infrastructure in jeopardy if access to migrant workers is suddenly withdrawn.

As the new Government enters the uncharted waters of Brexit negotiations, it will need to be aware that a sudden removal of access to EU27 labour would impact the deliverability of the Government's industrial strategy and National Infrastructure Plan – both critical to the GDP and economic growth. According to a paper from the Brexit Infrastructure Group, chaired by Sir John Armitt, there are already indications that construction firms have had to delay starts or turn down work due to a shortage of staff. Abrupt labour bans would also impede the industry's export potential, because without migrant labour it would struggle to deliver the work worth billions of pounds in construction and design services.

In the coming years, there is a £500bn pipeline of major infrastructure work including new high-speed rail routes, roads, Heathrow expansion, new nuclear power stations, refurbishment to the Houses of Parliament and a housing programme that virtually needs to double to meet demand. The Construction Industry Training Board (CITB) forecasts the industry will grow by 1.7% each year between 2017 and 2022, which will create an extra 179,000 jobs over five years.¹

However, in the face of this projected growth, construction is already facing a skills shortage, exacerbated by the prospect of a sharp decline in its workforce. We have yet to fully recover the 270,000 construction jobs lost in the recent recession.² An ageing workforce will mean that we can expect 430,000 people to have retired³ between 2010 and 2020, as 30% of the industry's workforce is over 50 years-old.⁴ On top of this, Brexit could see access denied to the estimated 194,000 workers who come from the EU.⁵ This represents about 9% of its workforce (based on a figure of 2.3 million people working in construction).

Regionally, the figures are more

pronounced, with migrant workers comprising 54% of construction workers in London,⁶ of whom around half are from the EU – equivalent to 100,000 of the 350,000 people who work in construction in the capital.⁷ However, in other areas, EU workers may be as low as 2% of the workforce.⁸

So, with a troika of growth, retirement and Brexit, the numbers point to an extremely concerning skills deficit. One organisation, Arcadis, believes that even without Brexit, across the whole industry we will need to recruit 400,000 more people each year or one person every 77 seconds.⁹ KPMG has estimated the training deficit at 51%¹⁰ if, as it predicts, there is a 35% growth in construction over the next decade.

Understandably concerned, organisations and professional bodies are sounding the alarm bells. RICS' construction market survey data show that skills shortages remain one of the main factors surveyors feel is impeding growth. The UK's capacity to deliver on housing and major infrastructure projects will be reduced by at least 7% (more in London) if the skills issue is not addressed.

In his review, Farmer claims that within the housebuilding sector alone, nearly five times more workers exited than entered it in 2016. At that rate, by 2020 housebuilding would have a deficit of 200,000 workers – again, that is without the impact of Brexit.¹¹

Construction is one of the UK's biggest industries, employing 2.6 million people¹² and its £100bn plus annual turnover makes it bigger than aerospace and automotive manufacture combined. It is also one of the nation's most important sectors – not only providing crucial infrastructure, but arguably has one the most critical roles to play of all industries in reversing the declining levels of social mobility.¹³ This is because the sector is one of few industries left that still employs a large number of traditional skilled trades, roles that can provide stepping stones for early school leavers/non-graduates into managerial roles.

Yet, for all its significance, the industry is riddled with structural problems that it has struggled with for decades and which are

¹ Construction Industry Training Board (CITB, February 2017): Industry Insights – Construction Skills Network. <http://www.citb.co.uk/research/construction-skills-network/construction-growing-to-meet-the-infrastructure-challenge/>

² Nomis: official labour market statistics – custom query on workforce jobs by industry (accessed 22/08/16 and submitted to us as evidence by Brexit Infrastructure Group)

³ UK Commission for Employment and Skills (2012): Sector Skills Insights – Construction (Evidence report 50)

⁴ DWP: Statistics on workers by sector

⁵ ONS figures Q1 2016 (194,000) of the construction workforce in the UK were EU nationals (based on workforce of 2.3 million) or around 9%.

Housebuilding sector: New entrants and leavers

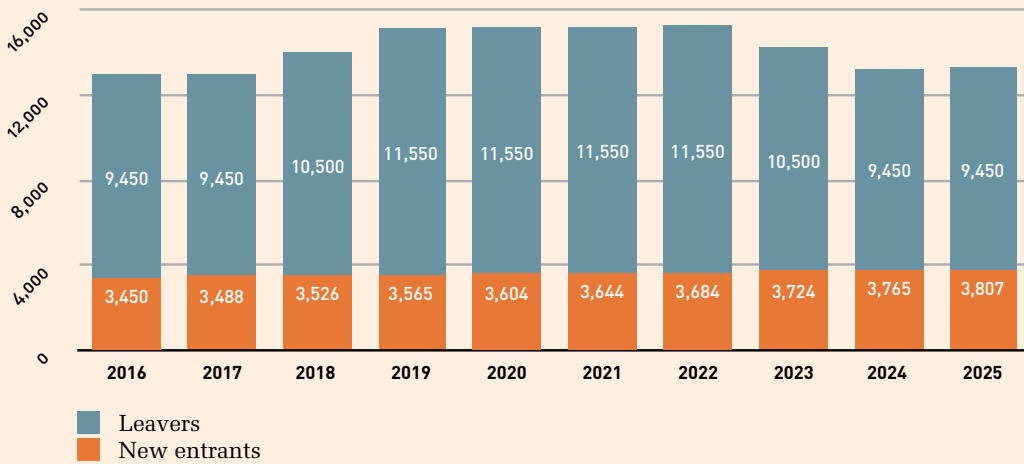


Figure 1. Cast, The Farmer Review, October 2016

Housebuilding sector: Forecast workforce vs required workforce

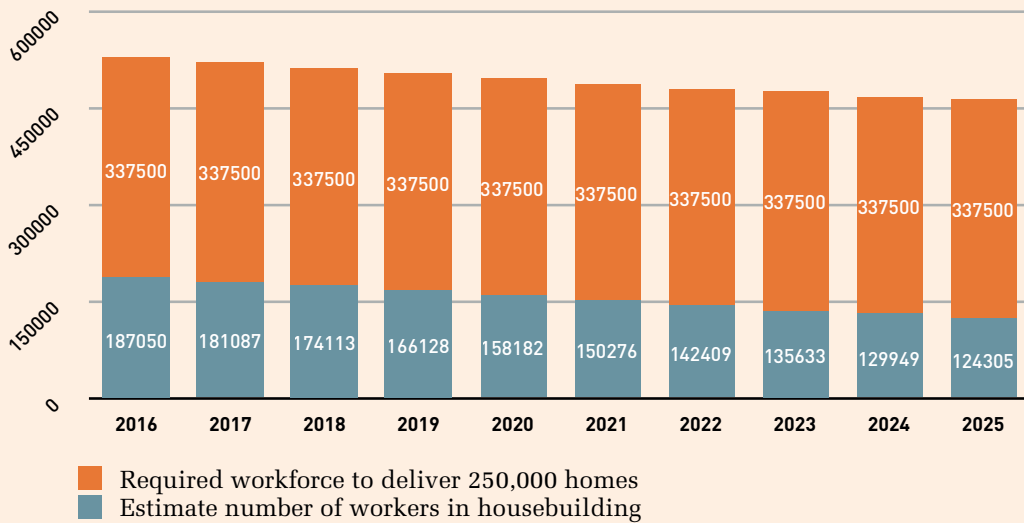


Figure 2. Cast, The Farmer Review, October 2016

⁶ Heather Rolfe and Nathan Hudson-Sharp, National Institute of Economic and Social Research(NIESR) – The impact of free movement on the labour market: case studies of hospitality, food processing and construction, April 2016

⁷ Housing for London, Sadiq Khan, February 2017. <https://www.london.gov.uk/press-releases/mayoral/mayor-warns-of-hard-brexit-impact-on-housing>

⁸ Heather Rolfe and Nathan Hudson-Sharp, National Institute of Economic and Social Research(NIESR), The impact of free movement on the labour market: case studies of hospitality, food processing and construction, April 2016

⁹ https://www.arcadis.com/media/4/B/9/%7B4B999107-2F44-42E2-94D7-43FDD0963378%7D9784_Talent%20Scale%20FINAL%20WEB_2102.pdf

¹⁰ Figures supplied by KPMG to Brexit Infrastructure Group

¹¹ Mark Farmer, Modernise or die: The Farmer Review of the UK construction labour model, October 16, <http://www.cast-consultancy.com/news-casts/farmer-review-uk-construction-labour-model-3/>

¹² Figures vary of workers in construction depending on what is included in the total from 2.1 million (not including professions to 3 million – which usually includes employment relating to product manufacture).

¹³ Social Mobility and Construction – Building routes to opportunity, CIOB, December 2016

largely to blame for its failure to invest in training. These include:

- Highly fragmented structure with long supply chains and self-employment culture.
- Low margins in some parts of the industry—those of the top 25 contractors averaged just 1.2% in 2015, though housebuilders, of course, have a hugely more profitable business model.
- Boom-and-bust nature of construction – the last recession in 2007 saw a net loss of 270,000 people
- UK recruitment is challenging with low retention rates, especially of UK unskilled workers.
- Poor image and general lack of awareness of the careers available, make it difficult to attract enough people into the sector.
- Uniquely among UK industries, productivity has not improved since the 1990s.
- It suffers from lack of diversity – only 11% of the workforce is female, and only 11% are from a minority ethnic background.¹⁴

However, as was made plain during our evidence sessions, there is a growing awareness that construction needs to both skill-up and modernise, and that Brexit increases the urgency and impetus to do that. The challenges ahead will certainly be tough – but too much is at stake for it to fail.

Therefore, it is essential that:

- Government stabilises the existing workforce – by announcing existing EU workers are able to remain in the UK and then putting in place transitional arrangements for a period of time, so that access to foreign workers does not fall off a cliff edge. This is covered in greater detail in Section 3.
- Government and industry work together to put in place a seamless training infrastructure which ensures we have skills for the futures from trades to professionals. Industry must step up to the plate and modernise, and it needs skills which are aligned with more productive construction

operations, embracing digital construction and offsite manufacture. This is discussed in Sections 4 and 5.

SECTION 3:

The need to stabilise the existing workforce

3.1 The importance of EU workers to construction

As discussed in the previous section, key measures need to be put in place in Brexit negotiations and beyond, if the industry is able to deliver both a million new homes by 2020 and the national infrastructure plan. Unless there is a dramatic downturn in the economy, construction will need to be able to draw upon workers from the EU countries and foreign workers generally over the next five to 10 years, while we increase the domestic workforce, and multi-national firms will need to be able to move their workforces across the globe.

The Government's seemingly overriding objective of bringing down immigration risks creating a 'cliff edge' scenario in which we suddenly find we have lost EU workers across a multitude of professions and trades.

As the Federation of Piling Specialists said in its written submission: "Policy makers should acknowledge that there is not a domestic pool of skilled and semi-skilled workers waiting to be employed if non-UK workers leave, and there is no prospect of this changing within a timescale of five to eight years. A sudden scarcity in the availability of skilled and semi-skilled workers in the UK will have an obvious and direct effect on construction wage inflation and by extension, the affordability of infrastructure and construction projects."

Most trade organisations are already reporting acute shortages of skilled labour. Brian Berry, chief executive of the Federation of Master Builders said: "We carry out trade surveys on our members, and our most recent showed that 58% of our members were struggling to hire bricklayers, and 57% were struggling to hire carpenters, 46% roofers, 39% plasterers, and 32% electricians.

These shortages are the most severe we have seen since we started surveying our members quarterly."

The number of migrant workers from EU and other countries is not known precisely. During the course of the Inquiry we were presented with varying numbers. The situation is complicated by the fact that some

foreign workers are 'posted workers' – ie, with their subcontracting companies - so are here for the duration of a project and employed by a foreign company, rather than a migrant worker.

The latest research from ONS put EU workers in UK construction at 194,000. A more comprehensive breakdown from earlier figures shows that migrants generally account for about 12% (based on 2014 figures) of the workforce at that time – with 6.7% coming from the EU, the greatest numbers working in construction in 2014 being Polish, Romanian and Lithuanian.¹⁵

But even taking a conservative scenario of 194,000 workers, that is still the equivalent workforce of 16 Crossrails.

Witnesses told us anecdotally that the weak pound is already having an impact with some migrant workers moving to other parts of Europe to find work. However, better news from the CITB suggests that migrant workers are planning to stay. The CITB report said: "Over three-quarters of migrant construction workers expect to stay in the next 12 months, and over half (56%) and particularly older workers say they wish to remain in the UK until retirement."¹⁶

The CITB report also found that:

- Half of London construction firms are heavily reliant on migrant workers.
- Two in five employment agencies expect staff shortages due to Brexit.
- Migrant workers give flexibility but just 1% of firms specifically look to recruit them.
- The migrant workforce is younger with a significantly higher proportion aged 25 to 34. To some extent this is masking the issues posed by an ageing construction workforce.
- In 2015 the five most common non-UK countries of birth of construction workers were Poland (55.5k), Romania (27.k), India (19.4k), Lithuania (17.9k) and Ireland (15.k).

¹⁵ Heather Rolfe and Nathan Hudson-Sharp, National Institute of Economic and Social Research (NIESR) – The impact of free movement on the labour market: case studies of hospitality, food processing and construction, April 2016

¹⁶ Migration and construction: the view from employers, recruiters and non-UK workers, CITB White paper, June 2017.

Many engineers, hit hard by recession in their own country, have successfully found work in the UK, yet Engineering UK recently reported that we need 182,000 new engineers and technicians a year until 2022.¹⁷ Balfour Beatty told us that 10% of its workforce is from Europe – though in some of its subcontractors the figure is far higher than that.

Matt Forbes, head of strategy at Balfour Beatty, said: “Last year we went to Greece and Portugal specifically to source 100 engineers to work on some of our major infrastructure projects that we couldn’t find in the UK. It was a successful initiative, but it was before Brexit happened, and I think, if we were trying to do that today, it would be much harder.”

“As long as the volumes of work stay high, we’ll have a skills shortage in the workforce. Domestic initiatives are exactly the right thing to do, and we’ve got to keep pushing on them, but we will still need a decent contribution from foreign labourers.”

Housebuilder Barratt says 69% of its London workforce of 4,500 people do not have a UK passport. In its submission, the firm said: “We conducted our own analysis of our workforce in London last summer and we found that 59% of our site workforce were at that time non-UK (another 10% were non-UK and non-EU).”

Its chief executive David Thomas told the Inquiry: “There is a Government expectation that industry will increase housing output from 160,000, where we are now, to roughly 250,000 new homes – that’s an increase of 50%. On the supply side, we need to train more bricklayers and roofers. And on the demand side we need to do more exploring of alternative methods of construction. But it’s vital that modern methods of construction do not compromise safety or quality – and the same goes for increasing output.”

The construction of Crossrail would have been difficult without foreign workers too – even though it has recruited 643 apprentices during the programme.

Crossrail chairman Sir Terry Morgan also said that around 30% of its workforce is

“non-British carrying passport holders in the EU”.

The RICS Construction market data shows that skill shortages remain one of the main factors that surveyors feel is impeding growth. “The UK’s capacity to deliver on housing and major infrastructure projects will be reduced by, at least, 7% (more in London) if the skills issue is not addressed,” the organisation claimed.

Concern has recently been flagged up in the road sector. Highways England estimates there are currently about 21,000 people working across the strategic road network but predicts it will need around 31,000 by 2020/21. Factoring in those that will leave the sector, the challenge is to increase the current workforce by more than 50% within the next four years.¹⁸

Giving evidence to our Inquiry, Gary Strong, director of practice and standards at the RICS, said the impact of Brexit would be widespread across professions and trades. “If you take compulsory purchase for example, HS2 is going to need a big input from compulsory purchase surveyors across the HS2 route. We’ve already identified a massive shortfall of compulsory purchase surveyors who would be able to carry out that work.”

The Chartered Institute of Archaeologists and the Federation of Archaeological Managers and Employers made a similar point in evidence presented to the Inquiry, claiming that the workload for the profession was set to increase because of the huge expansion in infrastructure projects in the next 10-15 years. Around 40 major infrastructure projects are planned between 2015 and 2033 across the UK, including HS2, Thameslink and the A14 upgrade, which could mean a shortage of between 25 and 64%.

However, it has been also pointed out that the impacts of Brexit will extend beyond a skills shortage. Steve Wooler, founder and chief executive of engineering consultancy BWB, said: “Currently, 7% of BWB people are continental Europeans. Access to the European labour market is also helping tackle the long-standing gender imbalance in the

¹⁷
Engineering UK Report 2016
<http://www.engineeringuk.com/Research/At-a-glance-2016/>

¹⁸
Highways Skills Shortage:
The Ticking Time Bomb,
Highways Agency, April 2017
<http://highways-uk.com/content/huk/docs/hukskillssurvey-2017.pdf>

industry because the majority of our Europeans are women.”

Lucy Carmichael, director of practice at RIBA, also pointed out that Brexit may not just damage delivery at home but will also damage export of design services.

She said: “In 2014, the gross added value of the architectural services was over £4bn, and that has increased by 16% since 2013. The UK’s export market for architecture is also strong, valued at £451m in 2014 and growing. And of course, underpinning the commercial contribution that the architectural sector is making to the UK economy, there is also the role that architecture plays in the international reputation of the UK as an innovative and creative economy, one which represents high quality.”

Carmichael added: “In terms of the current skill supply, looking at the balance between home-grown skills and skills that are coming from the EU, we have about 35,000 registered architects in the UK and at the moment about 25% of them are EU nationals – quite a significant proportion. And we are seeing potentially an increasing trend, or we were up until the decision to leave the EU, towards more EU qualified architects working in the UK – about 50% of new registrants on the ARB register last year were EU nationals. So, this is a very successful sector, but one that’s very much dependent at the moment on skills from the EU.”

Like many others giving evidence, Carmichael said “it is vital that Government confirms that EU nationals working in the UK can remain in the short term, to provide the continuity of capacity in our sector.”

And she added: “Moving into the long term, the negotiation phase, what really is necessary is continual recognition of qualifications across the EU, to enable both UK architects to practise in the EU, and qualified EU architects to practise in the UK. In the longer term, we need to be looking beyond the UK, both to global opportunities, and to how we can consolidate the domestic skills base in the longer term.

“There is an opportunity. Up until now

we’ve had to negotiate all of our mutual recognition of qualifications through the EU, which really has limited the extent to which UK architects can work internationally. And obviously, we can import skills from elsewhere in the world, outside of the EU. So a priority would be to seek new trade agreements, and likewise mutual recognition of qualifications with other nations, particularly in the big areas of construction growth, China and the US.”

Certainly, the Institution of Professional Engineers New Zealand, represented by Jonathan Gammon, chairman of UK Branch Committee, was hoping that Brexit would provide the basis for the whole migration and visa system to be shaken up which would allow British firms to draw more easily on talent from Commonwealth countries.

“We view Brexit as a positive situation. We want to create a level playing field, as there are barriers that employers face. When Balfour Beatty write in their evidence that 0.2% of their employees come from outside the European Union, because of the administrative difficulties that are involved and the time it takes, when a company that large says that, you must consider the troubles that small companies have with that situation.

“We are hopeful that Brexit will create a level playing field, and make that whole process a lot more straight forward; for example, remove those minimum salary barriers, and remove the fact that after two years you’re out.”

In written evidence, the Ground Forum says that Brexit will also seriously affect the competitiveness of UK consultants and contractors in the sector and the quality of services they currently provide.

Like others giving evidence, the organisation warned of the consequences of turning off the tap of EU labour overnight and switching to a visa point-based migration system like the one for non-British non-EU workers coming into the country to work.

Currently, outside of very specialist engineering disciplines, there are no construction professionals or trades on the

Shortage Occupation List. Workers from outside the UK have to go through what many described as a long-winded and highly bureaucratic process to obtain a work visa.

The Ground Forum told us: “Many companies in the sector have experience of the current visa/work permit system for ground engineers coming from outside the EU. Their experience indicates that it is costly, bureaucratic and often takes an unacceptable length of time. A similar system applied to European Nationals would be wholly unsatisfactory.”

3.2 Stopping skills falling off the edge of a cliff: recommendations around post-Brexit arrangements

It is essential to the delivery of the Government’s infrastructure and housing programmes that measures to reduce EU workers are avoided until the industry has created a mature culture and system of recruiting and up-skilling at scale.

Arcadis research presented to the Inquiry claimed that a potential ‘hard Brexit’ scenario, involving extending the points-based system currently in place for non-EU migrants, could see the number of EU construction workers entering the UK fall at an attritional rate. This would mean that those EU nationals leaving the industry cannot be replaced at the same rate by new EU workers. If this were to play out, the report estimates that 214,000 fewer people from the EU would enter the infrastructure and housebuilding sectors between now and 2020. Therefore, as we recommend below, it is essential that any new migration system provides a frictionless operation and is not overly bureaucratic and costly.

Stabilising

We recommend that Government stabilises the workforce by taking the following actions:

- 1. Ensure at the earliest opportunity an unconditional and permanent right to residence and work for existing EU nationals employed in UK construction.**

Neither employers nor employees can afford a continuing period of uncertainty or a sudden loss of capacity, as output would fall immediately and the construction industry would struggle to cope. Such a residential and employment measure would help stem the rising flow of EU nationals leaving the UK currently.

2. Develop a workable skills-based migration system that provides access to overseas workers.

We believe that there is a strong case for adding a number of roles in the built environment to the Shortage Occupation List and would hope that Government works with construction organisations to pinpoint those roles.

We would envisage that there needs to be a transitional period of, say at least five years, and more likely 10, when the migration system provides more flexibility to allow domestic skills to increase. But the industry also needs long-term clarity and certainty on the migration arrangements for the future.

As witnesses pointed out, employers need a system that is streamlined and does not add to costs and is not as unwieldy as the current Tier 2 visa system. We are concerned that the £2,000 fee, being proposed to charge employers for employing migrants, will be passed through into increased construction costs.

3. Secure reciprocal arrangements to allow global construction companies to move their staff to different locations to deal with peaks and troughs of workload.

The new migration system would also need to allow for straightforward intra-company transfers, which are now an integral part of the business model of specialists, so reciprocal access without introducing burdensome bureaucracy is essential. Construction is a global industry and needs to be able to move staff around the world for knowledge transfer, and to deal with the peaks and troughs of specialised workload, and harness export opportunities.

4. Provide temporary visas for ‘posted’ EU workers employed by overseas companies on specific contracts.

It has become commonplace in the UK construction industry to use imported materials that are then installed by the suppliers’ specialist workforce. These so-called ‘posted’ workers are individuals sent by an employer in another EU Member State to work temporarily in Great Britain. Posted workers are distinct from migrant workers because they are already employed in the Member State where their direct employer is established.

It is not unusual for building components to be supplied and installed by overseas suppliers and their workers – curtain walling would be an example. Again, any migration system post Brexit should be able to maintain posted worker status and provide temporary visas.

5. Allow non-UK construction students opportunities to remain and work in the sector for a set period of time following the completion of studies.

While Government has stipulated that students would not be allowed to stay after completing their studies, we believe that graduates studying for qualifications that form an integral part of the skills on the shortages list should be exempt for at least a transitional period of time. Allowing students from disciplines in the built environment to stay in the UK to gain professional qualifications would provide one of the easiest ways of ensuring UK construction firms have access to skills. Overseas students trained by UK firms bring with them diverse ideas and also, when they return to their home countries, they can help foster work opportunities for UK services.

6. Ensure, more generally, that the built environment sector is given the priority and support it deserves and which befits such a vital and important industry in the course of Brexit negotiations and withdrawal from the EU.

7. As part of Brexit negotiations ensure that

there remains continued mutual recognition of qualifications for professionals working in the built environment.

In the longer term, the UK should seek to forge new trade agreements and mutual professional qualification agreements with non-EU countries in order to provide the UK with access to a wider talent pool.

Box 1. Putting the migration figures in context

Construction firms draw more heavily on migrant workers when the industry emerges from periods of downturn. Ensuring the industry has a consistent long-term pipeline of work is therefore important in this regard, as pointed out by the CIOB in its written submission.

The percentage of migrants in construction is roughly comparable with the number in the workforce as a whole, with ONS Labour Market Statistics showing that the share of non-UK nationals in the workforce increased from 4.1% in 1998 to 9.8% in 2013. More recent figures from 2014 continue to show that, overall, the

construction sector's use of migrant workers is 12%.

As in 2009, this is roughly similar to the economy as a whole. However, in London, migrant workers account for a very much higher percentage of the construction workforce – 54%. London is, of course, an anomaly in construction terms: it accounts for 20% of all UK construction; it is the only region in the country where output has not shrunk or stagnated since the recession (it increased by 20% between 2007 and 2013 while the construction industry overall shrunk); and, unlike in all other regions, its workforce is now bigger in size than it was in the 2007

construction boom.

In total, foreign-born employment in UK construction stands at about 252,000 people and the overall proportion of migrant workers in the workforce has increased by 4% since the boom times in 2007.

Below is a series of scene-setting figures from the National Institute of Economic and Social Research (NIESR) from a report: The impact of free movement on the labour market: case studies of hospitality, food processing and construction, launched in April 2016.

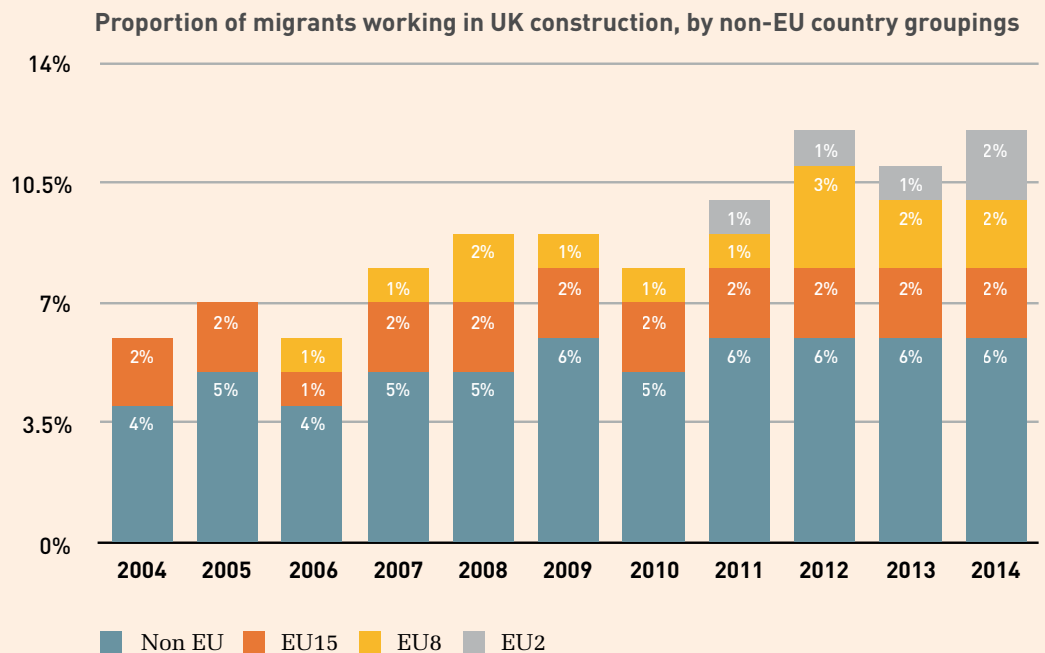


Figure 3. NIESR, The impact of free movement on the labour market, April 2016.

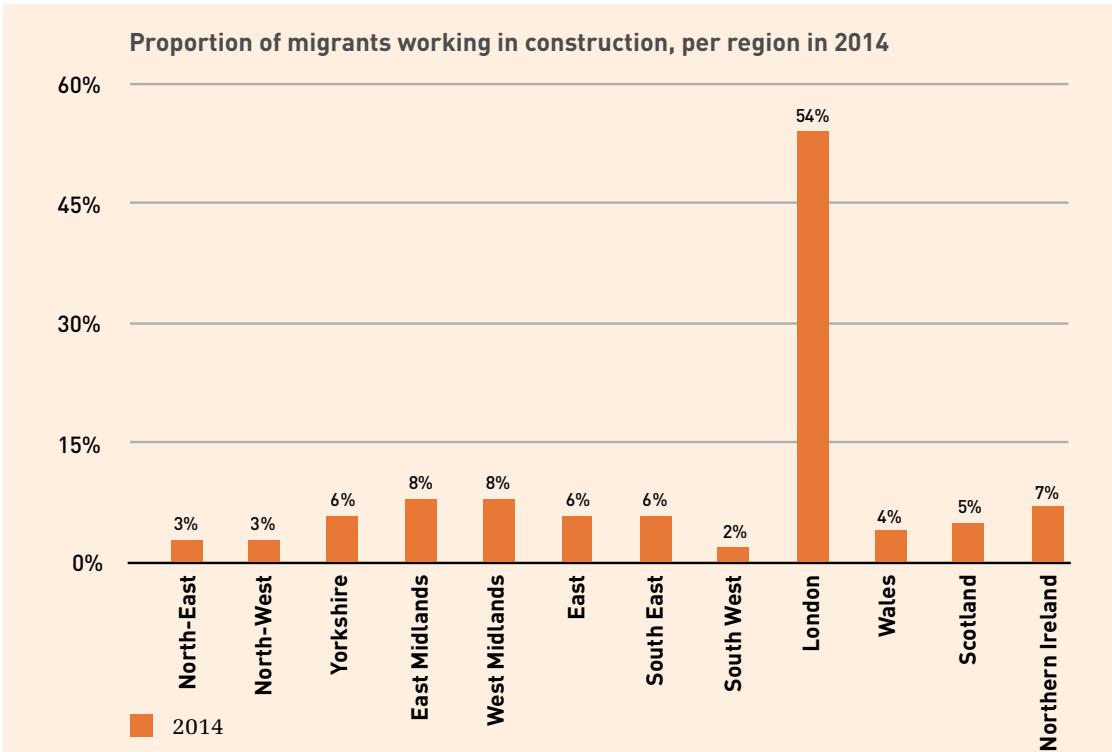


Figure 4. NIESR, The impact of free movement on the labour market, April 2016.

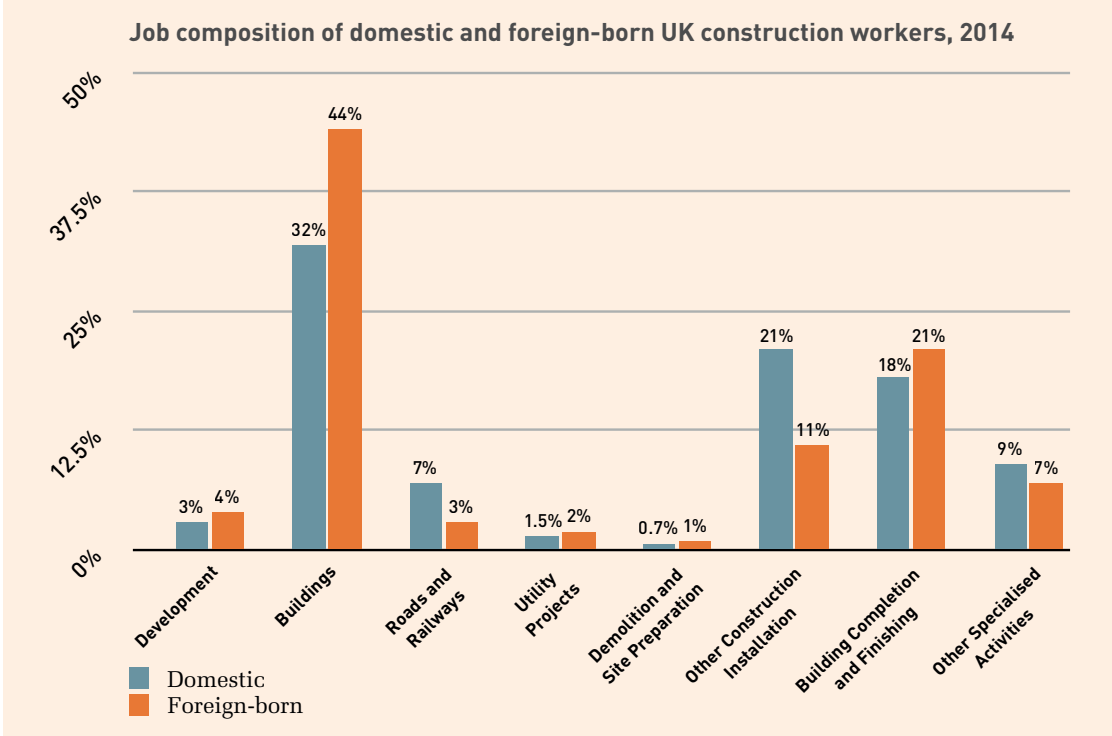


Figure 5. NIESR, The impact of free movement on the labour market, April 2016.

Attracting and training a skilled domestic workforce for a modern construction industry

4.1 The problems and challenges of attraction and training

From the evidence we heard, it became apparent to us that if the industry is to skill up to the extent demanded over the next five to 10 years it will need Government help putting in place a new training infrastructure. We think this would be best served with the establishment of a single organisation for the built environment that could oversee strategic needs, allocate funding and draw up training standards appropriate for a modern sector and for all the rungs on the skills ladder, from simple NVQ level 1 to post graduate level and beyond.

We urgently need an overarching body which can join the dots across the professions and trades and take a strategic view of the skills needed going forward, and then sell this to a new generation of talent that the industry must recruit into the sector.

The CITB has traditionally covered this role but its remit has been limited by statute and it was set up in an age when the lines between consultants, contractors, housing associations and housebuilders were not as blurred as they are now. Who pays the CITB levy, for example? It seems altogether random since housebuilders do, while residential developers and housing associations, both of which build housing, do not.

The introduction of the new apprenticeship levy for all large businesses has also led many in the sector to question the need for two levies, and how the money should be spent.

Construction employers clearly need to play their part, but to produce enough skilled people in the timescale, needs Government support as well.

We look in more detail at some of the problems brought to our attention.

- **The skills gap in the making**

As discussed in Section 2, there are multiple reasons why the industry has a rising skills gap. Chief amongst them are fragmentation, low margins and cyclical nature of the sector, which militates against training investment, together with, in some

instances, an attitude that training is someone else's problem.

On the question of margins, KPMG analysis of the finances of many of the UK's major contractors found that operating margins, a key performance indicator, fell by almost 60% from 2.8% in 2010 to an average of 1.2% in 2013.

Construction News's annual survey of the Top 100 UK construction contractors for 2016 indicated that the average operating margin for the Top 25 is just 1.2% – down from 1.8% a year earlier and significantly lower than the 2.5% seen in 2014's CN100. Even now, big contractors are still seeing their profits hit by problem contracts.

While housebuilders have more than recovered, their lack of training investment has led to the quality of new homes suffering, as we were repeatedly reminded during our last Inquiry.¹⁹ This is not least because the industry has only recently emerged from the worst recession on record, losing 270,000 jobs. More generally, the industry has found it much easier to attract migrant labour rather than school leavers. Until recently, training of apprentices in the sector has been virtually non-existent, dropping to fewer than 8,000 per year completing an apprenticeship in one of the traditional trades of bricklaying, plastering or plumbing.

Two thirds of apprentices in construction are delivered by firms with 50 employees or under. These SMEs were also hit hard during the recession.

There is also a high drop-out rate. According to the CITB, only half of the young people who go into an apprenticeship actually complete them – though for those apprenticeships managed by the CITB completion is higher at 74%.

More recently, training numbers have picked up. Across England, Scotland and Wales, new apprentices have risen from 19,973 in 2014 to 24,899 in 2016, a 25% increase. These are the highest figures since the present way of recording apprenticeships began in 2003, but it still falls far short of the numbers being trained in past decades. The CITB says on its Go Construct website

(<https://www.goconstruct.org/>) that the industry needs to recruit 135,000 apprentices by 2021 – around 10,000 more a year than currently. (These figures do not take into consideration professions and trades not covered by the CITB.)

Certainly, the industry's structure and modus operandi, coupled with clients' all too prevalent 'cheapest price mentality', presents an extremely complex picture – one that has been recently tackled by the Farmer Review and numerous reviews before that.

It is not the purpose or ambition of this report to provide a comprehensive forensic analysis of the sector's workings, failings and solutions. However, a number of specific issues have been brought to our attention, through our evidence-gathering activities, where the industry is failing in terms of process and lack of joined-up thinking - and we will touch more on this below.

The UKCES Employer Skills Survey 2015 UK report found that the sector's record on in-work training is poor – the third lowest compared with other industries. The survey data of 91,000 employers also shows that only 57% of construction sector employers provided any training in 2015 – the second lowest of all sectors.²⁰

So, even without Brexit, it is our view that things cannot go on the way they are. The industry needs little short of a revolution in terms of its training culture, approach and investment, if it is to attract and train a domestic workforce in sufficient numbers.

Housebuilders which have enjoyed huge Government support and have returned record profits over the last few years appear to have been woefully negligent in investing in training and innovation.

As the chairman of Crossrail, Sir Terry Morgan, said in his evidence: "Personally I find it very difficult to listen to some employers who talk about the risks of not having sufficient skills and yet who are relying on immigration and do nothing themselves to help the situation. There are too many employers out there who do not have the apprenticeship programmes, who rely on immigration or indeed rely on taking

skilled workers from other companies who've actually invested in their people."

- **Training does not meet the needs of employers and CITB is not fit for purpose**

Training in construction was described by witness Professor Linda Clarke, as dysfunctional.

Professor Clarke, from the Centre for the Study of the Production for the Built Environment, at the University of Westminster, said the UK's vocational education training system 'had virtually collapsed'.

"One clear reason is employer disengagement. That's not meant in any pejorative sense, but it's just ironic that it's an employer based system, and that we have a structure that really doesn't provide a training infrastructure.

"About half the workforce is self-employed. The large firms don't really employ labour, and the small firms just don't have a training infrastructure.

"So that's one reason. The second reason is the lack of a clear and comprehensive programme."

We agree, and what's more the whole area is in a state of flux, with uncertainty on many fronts – partly as a result of Government reforms but also because the training infrastructure and further education colleges have been out of kilter with the needs of employers for years. In particular, courses and standards and the type of training have not kept pace with industry needs and must now adopt new practices and innovation, such as offsite fabrication and digitisation.

The failure of the system is typified by the CITB training levy. As the Farmer Review pointed out, last year it collected £180m in levy but only paid out £140m in grants and has recently had to cut levy by a third to release some of the £90m surpluses it has built up.

Housebuilders contributed £16m of levy in the last period and got grant back for £7m. Farmer said in his review: "This suggests either large scale lethargy in implementing training in this sub-sector (ie, they accept the

²⁰ UKCES Employer Skills Survey 2015: UK report, UK Commission for Employment and Skills, published January 2016. <https://www.gov.uk/government/publications/ukces-employer-skills-survey-2015-uk-report>

levy as a straight employment cost) or the smaller enterprise end of this sector is carrying out training without grant recovery, which reduces margins and ability to invest in further initiatives and improvements.”

The Farmer Review casts a powerful spotlight on the gremlins in the inner-working of the training machine and it’s not the purpose of this report to go into them again. Farmer went on to recommend a full-scale review of the workings of the CITB and the only other training board, the Engineering Construction Industry Training Board. This is being undertaken by the former chief construction adviser Paul Morrell. We await the findings and recommendations of his report with interest.

However, we believe what is needed is a body with a wider remit, one that would take an overarching approach to skills and training from trades to professions – the CITB generally only deals with the skills at the trades end.

Our proposed built environment training organisation would provide strategic oversight, and an executive function which would join up many of the dots across the education and training spectrum.

- **The gap between further education colleges and employers**

Typifying how inefficient and disjointed the training landscape has become is the fact that 90% of the 50,000 people studying bricklaying and other skills courses aren’t finding jobs in the industry afterwards. Employers say the courses are often out of date and many trainees don’t have the attitude or skills to make them work-ready, and furthermore some have no real interest in the subject.

Witnesses mentioned the need to harness the 800,000 NEETS (young people not in Education, Employment, or Training).

Inquiry members were struck by the irony of the industry complaining it’s unable to find enough people who are interested in construction while at the same time readily dismissing thousands of people who have shown some interest. This seems wasteful in

the extreme.

We were pleased to hear, therefore, from the Home Builders Federation that as part of its efforts to upskill the industry it is looking at closer working with colleges with construction-related courses.

John Slaughter, director of external affairs at the Home Builders Federation, told us: “We’re in the process of getting together a proposal to run a pilot so they can develop an intervention with the colleges to see if we can close this gap. It is a failure of the system. But from the employers’ point of view, the colleges aren’t providing a sufficiently rounded person to be immediately employable, to come to site and do a job.

“I think it is the employers who have got to step in and say ‘this is what we need’, either by reinforcing what the college does or by providing a bridging course themselves.”

HBF has set up a skills partnership with £2.7m of CITB funding to boost training across the sector. It will focus on attracting new entrants into the industry, and on providing focussed training to develop the qualified workforce needed to construct new homes. Over its first four years it is hoped that the programmes will engage with over 3,500 companies, more than 40,000 workers and some 180 colleges and training providers.

It would seem logical, and a good practical step, if some of the new apprenticeship levy or even CITB levy (which, after all, has been unspent) could be channelled into a bridging type of training, to enable young people who need it to be readied for work.

- **Confusion surrounding the apprenticeship levy**

Adding to the general training disarray has been the arrival of the new apprenticeship levy. Though witnesses did not appear to be opposed to the new apprenticeship levy, which was introduced in April 2017, problems were drawn to our attention which we believe could make it less effective for construction and which must be addressed quickly.

The new levy is a cross-sector levy that all companies, in every walk of business, have to

pay at a rate of 0.5% of their annual salary bill, if it is £3m or above. The Government's aim is the creation of three million new apprenticeships between 2015-2020 (originally to be the duration of the previous Parliament). But it has been launched while it is still very much a work in progress. The situation is particularly complicated in construction, because it means around 900 companies are now paying two levies, and the relationship between the new levy and the existing CITB levy is unclear.

Those firms in construction that are liable to pay both are due to have their contribution to the CITB levy reduced but the details have yet to be worked out.

In our view, it makes no sense having two separate levies – even if they do pay for slightly different things. It would be better to have one amalgamated, 'flexible' construction levy, that could be collected through the apprenticeship levy, and then pooled and ring-fenced to pay for other types of training as well.

One important issue that has been brought to our attention is the lack of apprenticeship trailblazer standards, which are still to be drawn up. New apprenticeships and trailblazer standards are being introduced to match outcomes better with employer need. However, according to data given to Construction News by the CITB, fewer than 10% of the 70 new apprenticeship standards promised for the sector have been signed off as 'ready to be used' by training providers. Existing apprenticeship standards will be 'switched off' in 2019/20.

The authority to approve the end-point assessment originally laid with the Department for Business, Innovation and Skills before it was transferred to the Department for Education. It now sits with the newly formed Institute of Apprenticeships, which will take over assessments this month. According to Construction News, of the 70 construction standards overseen by the CITB, only six have been approved as "ready for delivery", with 26 awaiting "formal approval of end-of-training assessments", 24 still "in

development" and 14 "in the pipeline".

There is also concern that training for some construction workers will cost more than what has been allocated under the current funding arrangements.

On a more positive note, we are pleased that building firms will be able to transfer a proportion of their unspent apprenticeship funds to other supply chain members.

We think this safeguarding and flexibility should go further. Given the parlous state of the industry, we recommend that all the money raised by construction contractors and consultants should be ring-fenced for use in the sector.

We also believe it would be hugely beneficial for the apprenticeship levy to be employed in other ways, rather than purely fund apprentices. For example, it could be used to provide bridging courses whereby young people who might have done a college course, or have been out of work, or have faced challenges in life which have affected their ability to participate in the labour market, could be trained and mentored to become work ready. A number of charities in construction currently perform this role, but a lack of available and consistent funding has meant that even those with a track record in getting young people into work have been forced to close down.

Finally, we would like to recommend introducing flexibility to extend level 7 training (ie, post-graduate level). Witnesses reported to us that one highly successful route to getting more people into the industry, at graduate level, is to offer 'non-cognates' post graduate training to do one-year vocational courses. We were told, that this also provides a way of attracting more females into the sector. However, firms are limited in the number of young people they can take on via this route because of its prohibitive costs – around £30,000 per person. If the apprenticeship levy could be channelled to help cover some of the cost, it would open doors for more opportunities for both graduates and employers, particularly SMEs.

Box 2. Relationship between apprenticeship levy and CITB levy in more detail

Steve Radley, CITB policy director, explains the two levies:

“The reality is that both levies support apprenticeships but the different costs of apprenticeships. So the apprenticeship levy is to replace the tax-payer funding of the training costs of apprenticeships, which is

what Government currently provides to us. Our levy, as far as apprenticeships go, covers all the other costs - supervision, mentoring, subsistence, all those other factors which are significant within construction. We certainly see a role for the two of them in that way. The rest of our levy supports what you were talking about -

upskilling, retraining and all the other activities that we do to attract people to the industry, and develop qualifications and research etc.

How the two will sit together, we will find out next year when CITB goes for consensus, and next year we will be putting some levy options forward on that.”

- **Selling construction to young people**

A constant refrain from witnesses was the difficulty of attracting good people into the sector. Construction continues to suffer from a poor image with young people, teachers and parents. However, there are a number of initiatives brought to our attention that are said to be working well to draw school children to facets of the industry, ranging from a new careers portal set up by the CITB, to a new initiative designed to get school children interested in digital design and construction called A Class of Your Own,

through to Open Doors, which sees contractors open their sites to the public once a year.

It would seem too early to tell which of the numerous initiatives are working most fruitfully. Certainly, more analysis of the results is required. We also think there still needs to be a more overarching campaign to reach out to children. We see this as a suitable role for a new body – and it should have a remit to spend more of its levy money on attracting new entrants and not just training but in a way, that could provide measured results.

Box 3. T-standards

Attracting young people into vocational career paths will be the aim of the new T-levels announced by Chancellor Philip Hammond before the election. However, these qualifications for 16-19 year olds and are expected to be developed and phased-in between 2018 and 2022. The aim of the T-levels is to simplify post-16 technical qualifications into 15 routes to industry, one of which is construction. There are currently around 13,000 of

these technical qualifications, which makes it difficult for employers to know what any given qualification means in practice.

The intention is that there will be a core first year, before learners go to specialise in a particular trade or occupation, such as bricklaying or carpentry, which will suit the industry’s need to train entrants in a broader range of skills.

However, there are two main issues that need

resolving if they are to work effectively in construction: firstly, the need for all learners to complete three months work experience, when industry is not always willing to offer it; and secondly, it is not clear how T-levels will work alongside the new apprenticeship trailblazers. Would the T-levels simply be an entry route into getting an apprenticeship at 18?

- **Retention: holding on to older workers**

With 30% of the workforce aged over 50 and 20% of the industry, or around 430,000 workers, set to retire in the next decade, it would certainly make sense to try and slow this withdrawing process down and persuade some of these leavers to stay on for longer. But that means changing work practices.

As the Chartered Institute of Building (CIOB) put it: “With rising life expectancy and a rising pension age, it is incumbent on business to rethink its approach to older workers. Construction firms, and the industry as a whole, need to take urgent action to avoid its demographic bulge in older workers tipping rapidly into retirement over the next five to ten years. It needs to find and develop long-term solutions that will retain older workers for longer within the workforce.

“This will involve creative thinking. It may mean reshaping the work. It may mean finding new roles, such as training, overseeing and mentoring apprentices. But the industry can ill afford to lose so much human capital at such an early age when the demand for skills is rising.”

A report by the CIOB, *Exploring the Impact of the Ageing Population on the Workforce and Built Environment*,²¹ makes two key recommendations for how to accommodate older workers: changing the workplace and retraining people.

Retraining staff so they can take on supervisory or mentoring roles, or other less physically demanding onsite tasks, is a compelling option. It delivers a double benefit of retaining knowledge and skills while also passing them on to the newer generation of tradesmen and women. We believe the sector could be doing more to keep skilled staff in the sector and working for longer.

4.2 Recommendations to create and attract and train a skilled domestic workforce

Attracting and training a skilled domestic workforce

8. We urge the industry to get behind an overarching ambition to attract, train and retain a greater domestic workforce, and with skills aligned to harnessing more modern ways of working.

9. We need industry with strong support and assistance from Government to set up and shape a pivotal skills body for the entire built environment, to provide strategic oversight across the spectrum from the trades to the professions.

This body would:

- Set out a strategic direction for skills and training.
- Determine and agree the skills, courses, apprenticeships and the like needed today and for the future.
- Oversee new standards.
- Control a ring-fenced unused apprenticeship levy (see next page).
- Provide a strong influencing link to education.
- Become the ‘sales channel for the built environment’, helping industry come together to promote careers in construction, increase diversity and sell a new image – embracing the roles of technology and digitalisation.

We are particularly concerned that the lack of coherency in agreeing new apprenticeship standards is holding back apprenticeships from being put in place. In the short term we would like to see professional bodies, trades associations, industry and academia come together with the “Institute of Apprenticeships” to establish, as a matter of some urgency, a consensus on standards befitting the various trades and professions and get them signed off.

²¹ <https://kj06q2hv7031ix2143c36tpx-wpengine.netdna-ssl.com/wp-content/uploads/2016/01/CIOB-research-Exploring-the-impact-of-the-ageing-population-on-the-workforce-and-built-environment.pdf>

10. Having two training levies in the sector is unviable and confusing. We would like to see the CITB levy and the apprenticeship levy consolidated and simplified into one and the money ring-fenced so it is spent within the built environment to attract and train new talent with the skills for today and the future.

There also needs to be more flexibility in how the money is spent. For example, it could be spent to:

- Create a new pathway at a post-graduate level for non-cognate graduates wanting to transition into the construction sector with appropriate levels of higher apprenticeship funding (this works well for increasing diversity in the sector but costs firms £30,000 so can be prohibitive for smaller firms).
- Provide bridging training for work-ready skills to those that need it.

Box 4. Crossrail – a model for training

Crossrail is Europe's largest infrastructure project, building a 118km long high-frequency Metro-style railway under central London, from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east. The railway will be known as the Elizabeth line and will increase London's rail capacity by 10%. The Crossrail project is being delivered by Crossrail Limited (CRL), which is a wholly owned subsidiary of Transport for London (TfL).

Around 12,000 people are working directly on the project. CRL recognised that the industry was suffering from a skills shortage before construction started in 2009. In response, it implemented a skills strategy that not only supported the delivery of

Crossrail but has contributed to building a skilled workforce, capable of delivering Crossrail and future infrastructure projects. As part of this programme, Crossrail built the Tunnelling and Underground Construction Academy (TUCA) in Ilford in 2011. TUCA is the only facility of its kind in Europe and 15,000 students have been enrolled at the Academy to date. Working with industry, it adapts the programmes it offers to match the skills needed by business.

The core of Crossrail's skills programme has been apprenticeships. Crossrail had an initial target of creating 400 apprenticeships over the course of the project, to date it has created 602 apprenticeships.

Crossrail also worked to improve the diversity of its workforce and has worked with Women into Construction to provide opportunities for women looking to enter the industry. Its 2015-16 apprentice intake was 27% female, significantly higher than the industry average.

Many of the learnings from Crossrail have been adopted by the Department for Transport's Transport Skills Strategy, which was authored by Crossrail's Chairman Sir Terry Morgan. The strategy aims to deliver 30,000 apprenticeships in road and rail by 2020 and increase female and BAME participation in the industry.

Box 5. Bringing ex-service personnel into construction

A number of construction firms have begun recruiting leavers from the armed forces into their workforces at management and trades level. One initiative to help drive this forward is BuildForce, an industry-led initiative to encourage military service leavers and veterans into careers in the UK construction and built environment sector.

This collaborative project, part-funded by the Construction Industry Training Board's (CITB) Structured & Flexible Fund, was formally launched at a Westminster reception in June 2016 hosted by CIOB with six founding partners – Carillion, Crossrail, EY,

Lendlease, Morgan Sindall and Wilson James.

It aims to help reduce construction skills gaps while supporting ex-military personnel – through information, mentoring, work placements and training – into worthwhile careers.

Steering group chair Andy Parker, ex RAF squadron leader and now director of defence at contractor Morgan Sindall, has said: "UK construction needs to find over 220,000 new workers by 2019. With 120,000 ex-services personnel, currently without work in the UK and around 14,000 more leaving the

services annually, BuildForce aims to smooth the military-to-construction transition."

The project's advisory group includes more than 20 construction organisations, ranging from the all-important industry SMEs to international contractors and consultants. These businesses sign up to the BuildForce Charter committing named individuals to act as champions, ambassadors and – perhaps most critically – as mentors. They help service leavers and veterans to learn about construction, gain work experience, and identify career opportunities.

Box 6. New quality mark to drive diversity

The RICS has developed a new quality mark to drive behaviour changes in the membership by encouraging all firms to look carefully at their employment practices and ensure inclusivity is at the heart of what they do.

The Inclusive Employer Quality Mark (IEQM) is voluntary and self-assessed. When a firm signs up to the scheme it means they are:

- Committed to improving inclusivity according to the six key principles of the new diversity mark.
- Committed to monitoring performance, by completing a bi-annual self-assessment, which will mean gathering specific inclusivity data and submitting it.

The self-assessment returns deliver to each firm an individual dashboard giving details about how they are performing compared to

others in the profession, in each area of the mark – from leadership to recruitment. This will help them benchmark against peers and establish where more work needs to be done.

The IEQM has grown strongly with over 125 signatories reaching out to more than 150,000 employees in the private and public sectors.

The IEQM asks employers to pledge their commitment to adopting and continually improving against six globally-applicable principles.

- Leadership and vision: demonstrable commitment at the highest level to increasing the diversity of the workforce.
- Recruitment: engage and attract new people to the industry from under-represented groups; best practice recruitment methods.
- Staff development: training and

promotion policies that offer equal access to career progression for all members of the workforce.

- Staff retention: flexible working arrangements and adaptive working practices that provide opportunities for all to perform at their highest levels.
- Staff engagement: an inclusive culture, where staff engage with developing, delivering, monitoring and assessing the diversity and inclusivity of the workplace.
- Continuous improvement: continually refreshing and renewing the firm's commitment to, and activities to support, being an inclusive employer; sharing and learning from best practice across the industry.

Future-proofing, productivity and enterprise

5.1 The need for change

The Government is pinning great hopes of growth on its modern industrial strategy, which includes major investment in infrastructure, skills and research and development.

It said that, “If our modern industrial strategy is to succeed, it must address the UK’s slow productivity growth and it must be funded properly from the start. So we have launched a new £23bn National Productivity Investment Fund. The Government will target this spending at areas that are critical for productivity: housing, research and development, economic infrastructure and skills.”

The performance of the construction industry and its ability to deliver new infrastructure will be crucial to this plan. Construction accounts for 9% of GDP.

Building new homes, offices, schools, transport links, utilities and homes adds up to a £100bn output. But as we said in Section 3, construction must modernise to ensure new buildings and infrastructure are deliverable and affordable. The industry’s productivity has to increase - not just at trades’ level but across the professions in the built environment as well.

The need to boost industry productivity was a recurring theme during our evidence sessions. With fewer people to do the work, aiming to do more with less is essential. That said, most discussion and evidence gathering was around the general direction of travel, rather than conditions that need to be put in place to arrive there.

These overarching destinations for the industry were to:

- Increase productivity and introduce new, more efficient construction methods, such as offsite manufacture and robotic onsite assembly and harness building information modelling (BIM) to play a key part in making the best of what we have.
- Put the training infrastructure in place to drive new ways of doing things – as discussed in the previous section.
- Invest more in R&D to drive innovation and productivity gains.

We would echo these sentiments and ambitions for construction which, again, have recently been highlighted in the Farmer Review along with his recommendations to speed up progress.

So where are we now?

Productivity and digital construction

“When assessed against other industries, especially manufacturing-led ones, the differential is stark, not only in current absolute terms but also in how the gap has widened over time. Other industries have harnessed wholesale process improvement, by embracing and commercialising the role of technology, and have effectively reinvented themselves, by driving a paradigm shift in their end-to-end delivery,” said Mark Farmer in his review.

Poor productivity in construction is a worldwide phenomenon. The World Economic Forum Report, *Shaping the Future of Construction*,²² shows a 19% fall in productivity in US construction since 1964 while all other non-agricultural industries have shown a 153% improvement in the same period. The Chartered Institute of Building (CIOB) report, *Productivity in Construction: creating a framework for the industry to survive*,²³ which compared many industries’ productivity since 1994, shows that construction has been essentially flat in that period, in contrast with other industries, particularly manufacturing, where output per hour worked in 2015 was over 50% greater than 1994 levels. However, measuring productivity in construction is not as straightforward as manufacturing. “Paradoxically, you could be building more productively to a higher quality, with innovation in design, product manufacture and construction management, while the statistics suggests the industry is becoming less productive,” says the report.

There are also many disjointed steps in the process and some of this is outside the industry’s control. Lack of early, well-defined client briefs, clients changing their requirements late in the process, a separation of the design, procurement and construction,

²² http://www3.weforum.org/docs/WEF_Shaping_the_Future_of_Construction_full_report__.pdf

²³ <https://policy.ciob.org/research/productivity-construction-creating-framework-industry-thrive/>

and large-scale industry re-working and defects rectification, as pointed out in the Farmer Review, all add to the inefficiencies.

There has been a push from Government for some time to improve efficiency and working practices, with numerous reports extolling the need to reduce construction costs. Notably, the flagship policy of its 2011 Construction Strategy²⁴ was to mandate the industry to adopt building information modelling (BIM) on a so-called level 2 basis (a basic level) on Government projects by 2017, as a driver for more integrated working and reducing costs.

In July 2013, the Government published Construction 2025, Industrial Strategy: Government and industry in partnership,²⁵ setting out its long-term vision for “how industry and Government will work together to put Britain at the forefront of global construction.” This concentrated on targets rather than prescription and it was meant to be the role of the Construction Leadership Council, formed at the time, to foster Government/industry working. The objectives included:

- 33% reduction in the initial cost of construction and the whole-life costs of built assets.
- 50% reduction in the overall time, from inception to completion, for newbuild and refurbished assets.
- 50% reduction in the trade gap between total exports and total imports for construction products and materials.

In November 2016, the new chair of the Construction Leadership Council, Andrew Wolstenholme, proposed streamlining the activities of the CLC to make it more effective, focusing on:

- Delivering better, more certain outcomes through digital, BIM-enabled working.
- Improving productivity, quality and safety through offsite manufacturing.
- Whole-life performance through the use of smart technologies.

Our witnesses indicated that momentum has been gathering along many of these lines

– with adoption of BIM, greater uptake of offsite manufacturing and a growing awareness of the importance of research and development, which lies at the heart of innovation. We are also seeing new and potentially disruptive players coming into the housing market (see below).

Also, having put the machinery in motion to some good effect, the UK has won great plaudits for its BIM work and is now seen as a world leader. However, Government’s efforts around this process are now focused on taking BIM to a so-called level 3 as part of its Digital Built Britain.²⁶ These aims are laudable, but the industry needs to be brought along with it. There is much anecdotal evidence to suggest that support for level 2 BIM is still very patchy among public sector clients and even more so among developers in the private sector. Take up among smaller companies is also limited.²⁷

As the term starts for a new Government, it would seem an appropriate time for Government clients to report on their BIM experience, its benefits and where it could be working better. Those who have been investing heavily in BIM ought to be certainly rewarded where possible with work for their efforts.

Offsite manufacturing, research and development

Offsite manufacturing has been hovering on the verge of a breakthrough in construction for the past two decades. But it does genuinely seem to have reached a turning point. A new report from the CITB claims that use of offsite methods is set to soar across the industry.

Faster, Smarter, More Efficient: Building Skills for Offsite Construction, shows that 42% of construction industry employers with more than 100 staff expect to use offsite methods in five years’ time. Of those, 100% said they expected the use of precast concrete panels to increase and 91% anticipated the use of precast concrete frame to rise.

Nearly 50% of construction industry clients also expect the use of offsite construction to increase over the next five

²⁴ <https://www.gov.uk/Government/publications/Government-construction-strategy>

²⁵ https://www.gov.uk/Government/uploads/system/uploads/attachment_data/file/210099/bis-13-955-construction-2025-industrial-strategy.pdf

²⁶ <https://www.gov.uk/Government/news/launch-of-digital-built-britain>

²⁷ NBS survey 2017 and Construction Manager 2017 BIM survey (<https://www.thenbs.com/knowledge/nbs-national-bim-report-2017>) (<http://www.constructionmanagemagazine.com/insight/cms-bi5m-survey-2017-re4sults-ana8l-yse/>) (<http://www.constructionmanagemagazine.com/news/clients-s8till-not-buyi7ng-bim-rev6eals-cm-survey/>)

years. Offsite construction currently accounts for just 10% of industry output. The CITB has identified a huge training gap in this area, and in a welcome move has revealed plans to develop new offsite manufacturing courses.

On the housing development side, a number of big players are lining up to disrupt the market. The advance of the private rented sector and the business model it is based on - homes at scale being built quickly, as opposed to the for-sale model where housebuilders phase homes coming onto the market - play to the strengths of offsite manufacture. Here, scale and repetition of units serve to bring costs down.

One of the companies committed to the private rented sector is Legal & General, which has set up a new arm, L&G Homes, to manage the development of new homes, making it a major player in the sector. L&G will invest £55m in converting and fitting out a warehouse facility to manufacture homes which will be capable of supplying 3,000 houses a year.

A UK housing association has signed a landmark £2.5bn joint venture with a Chinese state-owned construction company to build 25,000 modular homes over the next five years.²⁸ Your Housing Group, which currently manages 33,000 affordable homes across the North West, Yorkshire and the Midlands, has agreed to partner with China National Building Material Company (CNBM) to build the homes, alongside WeLink, a renewable energy company. As part of the deal, which has the support of the Government, CNBM will build six factories in the UK, creating 1,000 new jobs.

This potential disruption in housebuilding is certainly welcome. And across the board, from private housebuilders to housing associations, there appears to be greater interest, because of the skills shortages.

Balfour Beatty, for example, in its submission said: “We also see modular design and offsite construction as a very powerful innovation to reduce the cost of housing and other infrastructure. The offsite construction sector accounts for around 7% of total construction output in the UK and is

increasing. These technologies go beyond addressing the skills shortage; they can help address the need for new housing and the low carbon agenda as well. Working in this way is also safer, more productive, delivers higher quality with less waste, and provides customers with substantial savings in terms of time and money.”

James Bryce of Arcadis said of offsite manufacturing: “I liken it to the transformation that the car industry had to go through 10-15 years ago. They had to invest heavily in technology, automation, and robotics. We’ve seen the rail industry go through a similar transformation, and maybe it’s time for our industry to do the same.”

He said he was not necessarily talking just about technology and digital, but also “an innovative approach to learning and development and growth of the skills base.”

Witnesses praised the approach being taken by Laing O’Rourke, which has been at the forefront with its leading edge “Design for Manufacture and Assembly” – whereby factory-made components are manufactured from design information at considerable investment. Its use, however, on three loss-making UK construction projects was a contributor to a £57.5m pre-tax loss (£53.1m post-tax) in Laing O’Rourke’s Europe Hub, according to its results to 31 March 2015. The company acknowledged at the time that three DfMA contracts were adversely affected by “input cost inflation and delays in delivery using new construction methods”.

The results certainly highlight the risks of innovation in the sector – and often the lack of reward.

Given the pressing housing crisis and the need to almost double housing output, we were nevertheless pleased to see in October the announcement that part of the £2bn accelerated housebuilding fund would be channelled to encourage modern methods of construction in housebuilding. There are still barriers, capacity issues and huge skills gaps that will need to be plugged to ensure that modern methods of construction move from minor to mainstream. This is the kind of support that will be needed for some time to

28

<http://www.telegraph.co.uk/business/2016/12/19/chinese-state-owned-construction-firm-signs-25bn-deal-build/>

ensure that offsite construction is able to meet a critical mass which will reduce costs and put offsite mainstream.

Looking at innovation and research and development more generally, here, again, there is much to draw encouragement from - with many of the large building firms appointing innovation directors or equivalent. There are good examples of clusters of activity where companies have come together to share innovation. And we were pleased to see a scheme at Crossrail for piloting innovation that could be used on future projects, with the research paid for by a number of contractors who share the results (see box out).

These pockets of activity are yet to be reflected in statistics, which still show the extent to which the industry lags behind other sectors and how far it still has to go. Even with tax breaks to draw on, construction generally seems to be shunning R&D. Construction is the lowest performing industry when comparing across different sectors; and drawdown of R&D tax relief in engineering and construction, relative to all claims made, is negligible. The Farmer Review revealed that of a total of £1.75bn offered to SMEs in the UK through the R&D Tax Credits Scheme, only 324 construction businesses have taken advantage of the scheme.

As part of its commitment to a strong industrial strategy including a £1bn R&D challenge fund, it is vital that the construction sector is able to win a slice of this funding. We would endorse the recommendation of the Farmer Review that firms come together to share R&D and additionally, of course, take advantages of the funding and tax breaks that are already on offer.

As the industrial strategy unfolds, Government should recognise the value of the construction sector and, picking up again on the Farmer Review, “be willing to intervene by way of appropriate further education, planning and tax/employment policies to help establish and maintain appropriate skills capacity, foster innovation and more

productive methods of building, such as offsite construction.”

5.2 Recommendations to future-proof the sector and make it more productive and enterprising

Future proofing and enterprise

11. Government has recently reaffirmed its commitment to a strong industrial strategy and is planning to form sector deals with key industries. We advocate that increasing productivity must be at the heart of the construction sector deal brought about by greater training and moves to use more modern and digital construction.

Spending more money on research and development will be crucial and we would hope that the construction industry win a vital share of £1bn R&D challenge fund on offer. We would certainly endorse the recommendation of the Farmer Review that firms come together to share R&D – and therefore make resources go further for the general good and competitiveness of the industry.

12. The construction industry needs to keep up the momentum in the harnessing of building information modelling and that requires Government to reaffirm its commitment to mandating level 2 building information modelling on centrally funded Government projects and ensure this mandate is enforced.

Box 7. How contractors have come together to pool research funding

The new ideas developed and tested during the construction of Liverpool Street have been made possible by Crossrail's innovation programme, Innovate18, which was developed with London's Imperial College.

The initiative involved Crossrail contacting various Tier 1 contractors in its

supply chain and asking them to not only agree to share ideas with each other, but also pay £25,000 into an innovation fund. All the major contractors working on Crossrail, including Balfour Beatty, Kier, BAM, Laing O'Rourke and Skanska, agreed. This created an open dialogue of ideas and a testing ground for new

innovation, and an £800,000 funding pool that could be used to develop and test new concepts.

The programme transcended contract and other boundaries and encouraged the collective effort to succeed, and is set to help across the whole construction industry.

Box 8. Why Skanska is investing in robot development

Skanska UK is aiming to create the world's first commercial 3D concrete printing robot, which could be used on site to produce variety of elements including cladding panels. It hopes to have a commercial machine ready for operation within 18 months.²⁹

The contractor, which had a UK turnover of £1.4bn last year, has been working on a prototype of the robot for the last two years with partners Foster + Partners, Lafarge Tarmac and robotics maker

ABB. It has accelerated development by becoming the first construction company to join the Manufacturing Technology Centre (MTC) in Coventry.

The MTC is a partnership between some of the UK's major global manufacturing firms, including ABB, and Loughborough University. It aims to provide a competitive environment to bridge the gap between university-based research and the development of innovative manufacturing solutions, in

line with the Government's manufacturing strategy.

Skanska says the robot would be particularly good in creating different cladding components. As part of the deal with MTC, Skanska has been given £950,000 from Innovate UK for the next two years. Similarly, £700,000 was awarded by Innovate UK over a year ago to develop robots for the construction of Battersea Power Station phase two.

²⁹

Box 9. The RIBA on changing how architects think

If production of new building is to improve in terms of productivity, then design and construction considerations need to be thought about in an integrated way – but they rarely are. However, Lucy Carmichael of the RIBA told us that the professional body was trying to promote to members “what we call design-led construction innovation”.

She said: “We’re trying to engage architects in solving the problems by using these new construction techniques.

We are promoting a series of case studies, demonstrating how architects can add value through their design innovation, their creativity, to that process but it’s early days. However, we hope this is something that will be embedded in skills and behaviours for the new apprenticeships we are developing, and will be something that starts to feed through into the curriculum for schools of architecture.

“It is going to be embedded into the CPD

curriculum. We’ve had the same CPD curriculum for about 10 years now. We are due to relaunch it now, and digital design and construction is taking centre stage, as a new area of skills that we are promoting to our members. The opportunity to highlight the architect’s role in design for manufacturing will be central to that.”

Concluding remarks

As the new Government begins the unprecedented task of delivering an effective Brexit, it is clear it will need to balance major competing pressures. If the door is closed to the supply of EU labour – which has been an essential ingredient to restocking construction after the recession for both trades and professions – the gap it would leave without transitional arrangements would be calamitous for delivering housing and infrastructure.

Those who provided evidence to us from all corners of the sector were unanimous in their call for companies to be protected against the hard-Brexit scenario, which would see skills simply falling off a cliff. Fewer entrants into the market and a demographic ticking time bomb of ageing workers have meant skills shortages have been building – Brexit would be an extension of that.

Of course, the other side of this equation is that construction must step up to the plate and overturn its long-established culture of under-investment in training, innovation and R&D and its reliance on migrant workers.

Across the board, there are huge structural barriers that have to be overcome – but there were plenty of positive messages to suggest that industry has an appetite to change: marrying training with innovation and new methods of construction; attracting the next generation in numbers we haven't seen in decades; being at the cutting edge of developing game-changing technologies, such as robots and 3D printing; and advanced integrated working through the adoption of building information modelling.

However, the industry is too fragmented to pull this off in the quick timescale needed and, therefore, we are recommending the formation of a single body to provide strategic oversight for skills, training and attracting new talent for the whole of the built environment, under dynamic and visionary leadership. Such a body is vital, if we are to pull off a huge step change in training and build up a more diverse and inclusive skilled domestic workforce.

But all of this will take time and prolonged

effort, and needs Government support through friendly policies, focus, its own procurement programme and in some cases financial incentives and tax breaks.

It is essential for example that Government maintains its commitment to the infrastructure projects in the pipeline, providing the sector with a continued and visible pipeline of work that will provide a level of certainty and confidence for companies to invest in training and research and development. Public projects also need to avoid 'race to the bottom' procurement and ensure firms that offer proper training and greater social value are rewarded.

It will also need joined up thinking to stop disjointed programmes, jeopardising the good work the industry is doing. The introduction of the apprenticeship levy seems to have been particularly ham-fisted and there are question marks over how it will work with the CITB levy, which urgently needs addressing. Not surprisingly, there are concerns in the sector about the efficiency and affordability of having two levies. Our view is that this does not make sense, is unsustainable, and that we would like to see this brought together in some way as one.

Brexit presents huge risks to the UK construction sector and, as a consequence, to our ability to deliver the homes and infrastructure that we urgently need. It is hard to overstate the importance of locking in construction to the heart of the industrial strategy and taking a proactive and comprehensive approach to the challenges facing the construction sector in mitigating the risks.

Although the challenges are tough, the potential rewards for adequately resourcing a key sector in our economy are huge. And always bear in mind that construction, more than any other sector, provides a valuable pathway for social mobility. Significantly skilling up the sector will also afford the opportunity to cement and extend our status as a global leader in the field of technical construction and design expertise. This is important whatever the outcome of the Brexit negotiation, but there can be no more

important time to do so than when we are seeking to negotiate a new relationship with the EU and secure the best possible future for the UK.

Witnesses who gave oral evidence

We would like to thank the following for coming to the APPGEBE to present evidence

Arcadis

James Bryce, Director of Workforce Planning

Balfour Beatty

Matt Forbes, Head of Strategy

Barratt Developments

David Thomas, Chief Executive

BWB Consultancy

Steve Wooler, Chief Executive

Centre for the Study of the Production of the Built Environment (ProBE), University of Westminster

Professor Linda Clarke

The Chartered Institute of Building

Chris Blythe, Chief Executive, and Eddie Tuttle, Associate director Policy, Research & Public Affairs

Construction Industry Training Board

Steve Radley, CITB Director of Policy and Partnerships

Crossrail

Sir Terry Morgan, Chairman

Electrical Contractors

*Association/Derry Building Services
Steve Burley, Director*

Federation of Master Builders

Brian Berry, Chief Executive

Federation of Piling Specialists

Alasdair Henderson, Chairman

Home Builders Federation

John Slaughter, Director of External Affairs

The Institution of Professional Engineers New Zealand

Jonathan Gammon, Chairman of UK Branch Committee

Royal Institute of British Architects

Lucy Carmichael, Director of Practice

Royal Institution of Chartered Surveyors

Gary Strong, Director of Practice and Standards

List of written submissions

Arcadis

Balfour Beatty

Barratt

Built Environment Skills in Schools

Brexit Infrastructure Group

Chartered Institution of Highways and Transportation

Centre for the Study of the Production of the Built Environment (ProBE)

Chartered Institute for Archaeologists and Federation of Archaeological Managers and Employers

Chartered Institute of Building

Construction Industry Training Board

Crossrail

Electrical Contractors' Association (ECA)

Federation of Master Builders

Federation of Piling Specialists

Institution of Professional Engineers
New Zealand

Ground Forum

Home Builders Federation

Royal Institute of British Architects

Royal Institution of Chartered Surveyors



All Party Parliamentary Group for Excellence in the Built Environment



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