

# The Chartered Institute of Building

submission to the

## Institution of Civil Engineers

on the consultation on

# Covid-19 and the new normal for infrastructure systems

*14 June 2020*

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# Covid-19 and the new normal for infrastructure systems: A Green Paper for consultation

## Introduction

The Chartered Institute of Building (CIOB) is at the heart of a management career in construction. We are the world's largest and most influential professional body for construction management and leadership. We have a Royal Charter to promote the science and practice of building and construction for the benefit of society, which we have been doing since 1834.

Our members work worldwide in the development, conservation and improvement of the built environment, both in the private and public sectors. We accredit university degrees, educational courses and training. Our professional and vocational qualifications are a mark of the highest levels of competence and professionalism, providing assurance to clients and authorities who procure built assets.

We welcome the opportunity to respond to this consultation and are happy to be involved in the debate as it develops.

## Full Response

### **Question 1: What other factors, or combination of factors, will determine attitudes to public life as we transition to a new normal?**

The Covid-19 crisis has led to widespread critical reflection on public life, particularly ways of working. From an infrastructure perspective, the success of the transition to remote working in some sectors has led to scepticism of the need to devote so much space to offices, and time to commuting. The dawning realisation that offices are not a necessary condition for work, and indeed, due to associated commutes, can impede productivity,<sup>1</sup> may lead to a recalibration of our built environment.

In spatial terms, the impact of Covid-19 will see a new hierarchy of needs emerge, and infrastructure should reflect this. For example, tolerance for devoting large swathes of urban space to offices filled with employees who could work remotely will be low, particularly considering the well documented difficulties for key workers to find appropriate housing close to their workplace.

The lockdown has also shown tangible gains in terms of reduced carbon emissions, and cleaner air in cities. We agree with the green paper, that that the public will want to preserve these gains, and the built environment can lead on this by encouraging a move away from car dependent development, while allowing transport infrastructure to evolve accordingly.

There have also been gains made in terms of reclaiming space for pedestrians, cyclists and social distancing. It is unlikely that users of the built environment will want to give up these gains and revert to less efficient uses of space if restrictions are completely lifted.

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<sup>1</sup> Ommeren, Jos & Gutierrez-i-Puigarnau, Eva. [Are workers with a long commute less productive? An empirical analysis of absenteeism](#). Regional Science and Urban Economics. 41. 1-8. 10.1016/j.regsciurbeco.2010.07.005., January 2011

## **Question 2: What other systemic changes, driven by lessons learned during the lockdown period, can we expect to be important as part of the new normal?**

As the green paper rightly points out the crisis has led to a markedly collaborative response from the construction industry. The Construction Leadership Council (CLC) has provided a sensible roadmap, which proposes a three-phase response to the crisis: restart; reset; reinvent.<sup>2</sup>

The reset phase will be crucial to the long-term success of the industry. The crisis provides the construction sector with the opportunity to modernise. This opportunity should be embraced, with lessons learned from pockets of innovation during the crisis rolled out across the sector.

The use of technology and advanced manufacturing will be part of this modernisation. In a world where supply chains are put under pressure and labour is not as freely available due to on-site and travel restrictions, technology and advanced manufacturing provide tools that can be used to address the construction industry's productivity issue.<sup>3</sup>

### Technology on-site

In recent years the construction industry has begun to embrace technology, and the closure of many sites under lockdown has, in some cases, led to the quickening of this process. Firms under pressure to get back to work and complete projects have used the opportunity to modernise, with many using technology to accelerate a return to work. For example:

- The use of 3D model viewers, has allowed work to resume on construction sites before staff return;<sup>4</sup>
- the use of VR in a project to reconstruct a water treatment centre. The use of technology in the project has improved teamwork and saved costs on the reconstruction of the Durleigh Water Treatment Centre.<sup>5</sup>

### Technology in the business process

However, it is not just striking on-site uses of technology that can improve productivity and allow firms to do more with fewer people. The use of digital information sharing platforms in the business process stage of a development can speed up projects at their genesis.

The NHS Louisa Jordan field Hospital in Glasgow<sup>6</sup> is a good example of the use of technology and innovation at the business process stage leading to time savings and efficiency gains throughout the project. The use of platforms to allow for digital information exchange between the multitude of stakeholders involved in the project, provided crucial to a speedily delivered, well executed project.

For example, the hospital used a BIM Field iPad-based system for raising and closing out defects and snags. Defects were recorded using the app, the contractor got a notification, was able to rectify it and then it could go back for inspection and sign off. It saved hours of time. It helped manage and maintain quality throughout and was dynamic and transparent, giving

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<sup>2</sup> Construction Leadership Council, [Roadmap to Recovery: An Industry Recovery Plan for the UK Construction Sector](#), June 2020

<sup>3</sup> Chartered Institute of Building, [The Real Face of Construction 2020](#), February 2020

<sup>4</sup> Bim+, [Willmott Dixon to deploy 3D model viewer on all sites](#), June 2020

<sup>5</sup> Bim+, [Case Study: Reconstructing a water treatment centre with Shared VR](#), May 2020

<sup>6</sup> Scottish Government, [Construction of NHS Louisa Jordan complete](#), April 2020

assurance about how contractors and subcontractors were maintaining their own quality.<sup>7</sup> This shared digital platform type system is already in use on many construction projects and could be implemented more widely as the construction sector returns to sites under pressure to save time and money, while operating with fewer staff.

Traditionally, it takes 2-3 years to produce an outline business case and strategic assessment for a large construction project. Digital platforms can advance projects through the business case phase quickly and get the supply chain involved earlier, thereby saving time and reducing cost.

As is the case in most sectors, establishing a single location for project documents using cloud-based technologies can keep everyone on task and working productively. Team members can work from the same documents in real time, with version tracking to manage the information, while on-page comments enable rapid communication. Importantly, this approach can also improve collaboration with clients and partners in other organisations to better manage all relationships in the supply chain.

### **Question 3: Are our assumptions of the new priorities for infrastructure correct?**

While the lockdown has had an immediate, negative impact on the growth of the construction sector, it has also given pause for thought and provided the industry with a chance to modernise. As above, this will involve addressing long term, sector specific challenges such as productivity, but could also lead to consideration of the sector's role in addressing wider societal goals such as quality of life, and climate change.

There is already repurposing work happening in towns and cities to make them more pedestrian, cycle, and social distancing friendly, and construction – specifically repair, maintenance and improvement (RMI) work - has a key role to play in this. In the immediate term there is a clear case for a construction and infrastructure pipeline to repurpose towns and cities, providing sustainable transport infrastructure, and social distancing friendly spaces. These socially valuable, labour intensive RMI projects have the added benefit of providing a stable pipeline of work and creating a built environment fit for the future.

Previous recessions have shown a tendency for Government's to respond by focussing on large-scale infrastructure projects that garner public attention but do not always support a stable and regional pipeline of work for the industry. In a world where the emphasis in the short-term is on staying local and socially distancing, there does need to be more consideration given to smaller scale interventions, and the viability of certain large infrastructure projects given rapidly changing user preferences. In planning for future construction, we suggest that the Government works hand in hand with both the construction and infrastructure sectors to prioritise local needs and employment and then ensure that large scale infrastructure projects align as we begin to gauge how the behaviour of users in the built environment changes.

#### Adaptable buildings

The green paper correctly flags concerns about the conversion of office space to deliver housing supply. Permitted Development (PD) rights have led to numerous adverse outcomes from a quality perspective and we would recommend in depth research looking at where PD rights failed before embarking on a similar agenda.

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<sup>7</sup> Building, [Five lessons from building NHS Louisa Jordan](#), May 2020

A longer term, more sustainable solution would look at interventions earlier in the building process, rather than retrofitting office blocks that are simply not suitable as housing. ‘Seed Planning’<sup>8</sup> is a building technique which gives minimum specification of how form relates to function, thereby allowing a building to fulfil multiple uses over the course of its life without sacrificing quality as it changes. Given the level of flux we are witnessing in terms of how users relate to the built environment, particularly the contingency of office space and the ongoing need for centrally located, affordable housing, seed planning is the type of intervention we could implement now, that will give new buildings the ability to continually adapt to the changing world.

Modern methods of construction (MMC), particularly modular, off-site solutions are well placed to facilitate the adaption involved in a seed planning approach. Modular off-site buildings can be built so that they can be re-configured through their lifetime, adapting to different needs as they evolve. Modular construction provides a repeatable system of building that is easily adapted according to different requirements for height and floor area ratio, and is thus deployable across a range of contexts. This is particularly pertinent in the context of large swathes of office space potentially becoming obsolete overnight.<sup>9</sup>

As the green paper puts it ‘there is a greater requirement to accommodate future uncertainty that may impact demand in order to ensure greater levels of resilience’. Seed planning and modular construction by their very nature accommodates this uncertainty.

An emphasis on seed planning and modular building also chimes with the regional rebalancing policy goals of the Northern Powerhouse, with the North of England being an ideal testbed for greater modular integration. For example, The Laing O’Rourke Explore Industrial Park is near Worksop, Nottinghamshire and the Legal & General Modular Homes project is just east of Leeds. Ilke Homes, which aims to build 2,000 new homes annually, has a factory in Knaresborough. With a heritage in industry and engineering, the north has much to gain from the changing face of construction if it seizes the opportunities.

**Question 4: What other changes to infrastructure provision will be needed and what assumptions sit behind that need?**

See Question 5

**Question 5: Have we made the correct assumptions on the changes in delivery that will be required, to deliver infrastructure as part of the new normal?**

Innovative funding mechanisms

Working on the assumption that there will be a squeeze on public finances post-Covid 19, with limited public money to invest in infrastructure, now is the time to consider innovative methods of infrastructure funding. If our cities and towns are going to be the main sites for public investment in carbon-free sustainable infrastructure, we are going to need to rethink how the economics behind those investments work.

Repurposing for social distancing and sustainable transport will make cities more attractive places to be, and this will have a positive impact on land values. As it stands the tax system, duties, or planning levies are simply not equipped to access that value for the public good, but there are exemplars of innovative infrastructure financing that can do just that.

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<sup>8</sup> Richard Sennet, [Building and Dwelling: Ethics for the City](#), April 2019

<sup>9</sup> See <https://www.nytimes.com/2020/05/19/opinion/twitter-work-from-home.html>

The success of Tax Increment Financing (TIF) in funding the Northern Line Extension,<sup>10</sup> and the use of a Business Rates Supplement to fund Crossrail,<sup>11</sup> provide useful process templates for leveraging the uplift in land values associated with public investment in infrastructure to fund that investment in a circular way.

As it stands, local authorities can apply to HM Treasury to retain an uplift in business rates for a period (usually 25 years) and use part of the present value of this sum to fund infrastructure or decrease blight in development areas. For example, Falkirk Council's £67 million TIF scheme is expected to bring in £413 million in private investment into the area, creating almost 6,000 jobs and hundreds of apprenticeships.<sup>12</sup> Under TIF, councils fund improvements by borrowing against future business rates income created by infrastructure investment. This model should be encouraged as infrastructure needs change in a post-Covid-19 world where public money for infrastructure is limited.

### Governance

The governance of infrastructure projects needs to be appropriate, and decisions about what infrastructure an area needs should be made at the most appropriate level. While there will be a role for national policy guidance, each area will be impacted differently by Covid-19 and decisions around its infrastructure needs should reflect that.

HM Land Registry have recently trialled property transactions using digital contracts and blockchain technology.<sup>13</sup> These digital platforms could allow decisions about local infrastructure and assets to be made at the community level. They could also allow those assets to become collectively owned and for the value they create to be re-linked to the neighbourhoods around them.

There is also a clear opportunity in terms of public assets – particularly land holdings. Instead of selling land off to the highest bidder – as is currently national policy as directed by the treasury – alternative criteria, which take account of wider socio-economic national policy goals such as the delivery of sustainable transport infrastructure, could be set.

### **Question 6: What are the intermediate steps required to move us towards these new approaches to delivery?**

There needs to be a move towards value-based procurement, particularly in the context of a stimulus package from the Government. This means projects procured using the stimulus should consider not just the economic costs and benefits of projects, but their positive and negative impacts on society and the environment. The proposed stimulus provides a valuable opportunity to build this wider conception of value into procurement processes. Crucially, this will require cross-departmental buy in, particularly from the Treasury.

### **Question 7: What other fundamental shifts are required to deliver concrete and long-lasting change in how we operationalise to deliver infrastructure to achieve societal requirements?**

From a policy perspective the resetting of the construction sector post-Covid-19 provides an opportunity to embed pre-existing measures and regulations, such as building safety reviews, into projects. Government can lead on this, using a joined-up approach to the recovery plan

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<sup>10</sup> Regional Studies Association, [Is Tax Increment Financing the most effective tool to support urban investment? The case of London Northern Line Extension](#), November 2014

<sup>11</sup> London Assembly, [Paying for Crossrail: business rate supplement](#), 2019

<sup>12</sup> Falkirk Council, [Preferred developer appointed for the Falkirk Gateway project](#), February 2019

<sup>13</sup> HM Land Registry, [Could blockchain be the future of the property market?](#), May 2019

for infrastructure. For instance, any infrastructure projects benefitting from the proposed financial stimulus package could be required to embed recommendations from the Building Safety Programme and the Hackitt Review, thereby acting as exemplars for industry.

From a practical perspective, implementing the recommendations made in this response in terms of the use of technology in building processes will be dependent on a proficient workforce. Again, this will require joined up thinking by the Government in terms of training. A move to digital and advanced manufacturing must be accompanied by a skills agenda which ensures that the UK supply chain is ready to deploy these new technologies.

Safety is of paramount concern here; the industry cannot risk another high-profile failure as we mark the three year anniversary of the Grenfell tragedy. The wellbeing of the end users of the built environment must be borne in mind as industry embraces technology and new ways of working. Furthermore, the changing face of the sector during this difficult transition will bring further health and safety challenges to the workforce itself, and the skills agenda will need to continue to emphasise the highest standards for their wellbeing.

From a governance perspective, England, Wales, Northern Ireland and Scotland have each adopted different approaches to Covid-19 restrictions in the construction sector.<sup>14</sup> Taken individually each set of measures may be sensible, but having different regimes operating across interdependent jurisdictions, with differing timeframes, has caused further uncertainty which, given supply chain inter-dependencies and the movement of goods and services across the UK, is itself a multi-lateral enterprise.

While each administration in the UK is different and is best placed to make decisions as to what is most suitable for its jurisdiction, planning for the construction sector post Covid-19 should be spatial, reflecting pre-existing relationships rather than administrative boundaries. Making decisions for the construction sector at an appropriate geographic scale, which recognises the international nature of its work, will make it easier for the sector to reset as the restrictions are eased.

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<sup>14</sup> See <https://www.ciob.org/blog/scotland-and-wales-fight-against-covid-19>