INSIGHTS
2021

THE NEW NORMAL

How we level-up in a post-COVID world

mace

macegroup.com

CONTENTS

FOREWORD

Mark Reynolds
Group Chief Executive

The last twelve months have fundamentally changed the political and economic landscape of the UK. However, we must recognise that the long-term impact of the pandemic won't impact all regions equally.

Historic underinvestment in infrastructure, poorer digital connectivity, worse health outcomes and fewer opportunities will mean that the UK's most deprived areas – largely focussed in the North and the Midlands – will suffer more.

The moral, economic and political case for levelling up has never been clearer. The UK faces huge regional inequality which we must urgently address – to improve the quality of people's lives, to deliver sustainable national economic growth, and to help us 'build back better'.

As such, we should see the Government's ambitions around our return to the 'new normal' as a huge opportunity for the UK to address historic inequality, create a more cohesive and sustainable society; as well as helping us to reach our ambition national net zero carbon targets.

To truly level up, we must solve the productivity challenge – both in our industry and more widely across the economy. Every single percentage increase in economic productivity drives a 1.5% increase in real wage growth. By boosting productivity and creating, high quality, highly productive jobs we can drive huge economic and social benefits and truly 'level up' the economy.

But more than that, to get the best possible outcomes for everyone we must do so while addressing the climate emergency and driving social value in everything we do.

To do that, we must be prepared to seek radical solutions that disrupt our current thinking about growth, infrastructure delivery and industrial development. We cannot continue on as we have before – the inequalities we faced before the pandemic are already embedded in the system.

By using innovative methodologies as a catalyst, construction can super-charge the levelling up agenda. This report shows that we could save the UK taxpayer £2.8bn a year on our infrastructure pipeline, while at the same time boosting social value, reducing carbon emissions and improving productivity.

In fact, our own estimates show that modern methods could raise productivity levels across the sector by 50%, from £30.11 per hour worked up to £45.17 per hour worked, making construction more productive than manufacturing and the UK economic average.

But even beyond those benefits, a new delivery model could re-shape how the construction industry operates, driving spectacular growth in the areas that need it most. By creating construction manufacturing hubs in the areas that need it most, we could create more than 124,000 high quality regional jobs and a huge regional economic boost of £4.9bn.

It's clear construction can provide a multi-billion pound boost to the levelling up agenda – but to do so, we must be prepared to think differently and transform how we deliver.

> This report shows that we could **save the UK taxpayer £2.8bn a year** on our infrastructure pipeline, while at the same time **boosting social value, reducing carbon emissions and improving productivity**.

THE CASE FOR LEVELLING-UP

The UK is one of the most geographically unequal economies in the developed world. Levelling-up the country is a multidimensional challenge in which many longstanding structural inequalities need to be addressed with an important role for construction to play.

These inequalities are only likely to have been exacerbated and magnified by the COVID-19 crisis, threatening to widen existing gaps and push entire generations and regions further behind.

As the Institute for Fiscal Studies notes, even prior to the crisis *"there was a sense that the UK is not only a highly geographically unequal country, but also an increasingly geographically unequal one.*[v]*"*

We have already seen the impacts of the pandemic affecting some regions of the UK more severely than others. Jobs in the North and Midlands are more vulnerable to the lockdown restrictions imposed and the changing economic picture in the country. At the height of the first wave, the two regions with the highest uptake of the government's Coronavirus Job Retention Scheme were the Cumbrian districts of South Lakeland and Eden where around four in ten of eligible workers were furloughed. By contrast, in Oxford and Kensington and Chelsea around one in four of the workforce were placed on furlough.[vi]

Deprivation in the UK comprises several interrelated elements including income, employment, health and education. The Index of Multiple Deprivation (IMD) brings these elements together using official statistics to provide a comprehensive measure of local deprivation. The most recently published IMD shows that 18 of the 20 most deprived neighbourhoods are in the North of England.

With vaccines now rapidly being rolled out, it is vital that our response to COVID-19 not only prevents the widening of the geographical divide in the UK, but also that the crisis is leveraged as a once-in-a-lifetime opportunity to redress the balance, make progress towards our Net Zero ambitions and level-up to provide opportunity. Among the many issues that need to be addressed include unemployment and job opportunities, digital connectivity, health inequalities and productivity.

The most recently published IMD shows that...

18/20

of the most deprived neighbourhoods in the UK are in the North of England

4/10

of eligible workers were furloughed in Cumbrian districts of South Lakeland and Eden, by contrast...

1/4

of eligible workers were furloughed in Oxford and Kensington and Chelsea

THE PRODUCTIVITY GAP

Productivity is a good proxy for a range of outcomes and serves as a reliable indicator for the relative success of a region. It is highly correlated with several measures of life quality and chances, such as disposable income, education and crime rates.[vii]

The UK is a highly geographically imbalanced economy, with most of the output concentrated around London. In Europe, only Poland and Romania are more spatially imbalanced than the UK according to data from the OECD and Eurostat.

Productivity is typically measured by gross value added (GVA) per head. Data from the Office for National Statistics (ONS) shows a clear regional divide in the UK. The North East and Yorkshire and the Humber have the second and fourth lowest output levels nationally. In fact, productivity is so highly concentrated in London and the South East that these are actually the only two regions with GVA levels above the UK average. Worryingly data since 2010 also shows that poor performing regions have generally fallen even further behind.

One of the challenges with tackling the UK's productivity challenge is overcoming the so-called *'Matthew Effect'*, whereby areas already doing well draw in more and more resources which widens the gap between advantaged and disadvantaged areas unless conscious effort is made to counteract it.

Clear evidence of the Matthew Effect can be seen in ONS data. Between 2010 and 2018 West London saw a 37% increase in GVA, whereas Northern regions such as Tees Valley and Durham have experienced GVA growth as low as 0.4%[viii] which in reality is going backwards due to inflation. Poor performing regions of the North will require significant increases in productivity growth rates in order to level-up.

Recent research published by Sheffield Hallam University suggests that the post-COVID world will inherit much of the same capital stock, workforce and infrastructure that was in place pre-pandemic.[ix] This means regional gaps and inequalities will remain unless strong decisive action is taken to improve skills, transport infrastructure, digital connectivity and investment levels.

Productivity is not an abstract concept without real meaning and implications. Research shows a strong link between productivity and wages with every 1% increase in productivity generating a 1.5% increase in real wage growth.[x]

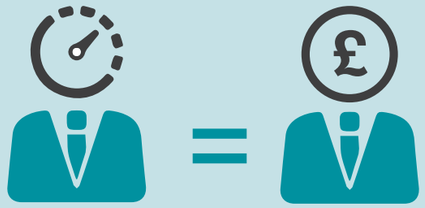
Taking two examples, a 34% increase in productivity bringing Blackpool up to the UK average would equate to a wage increase in the town of 52%, raising the average weekly full-time wage from £455 to £692. In Stoke on Trent, a 27% increase in productivity is needed to reach the national average, which would see a 42% increase in weekly wages, from £501 to £711.

Raising the economic output per head in the North from its current value of £21,555 to the UK average of £26,625 would mean an extra £70 billion of output. Similarly, bringing output in the Midlands up to the UK average from its current value of £22,399 per head would increase economic output in the region by £40 billion.[xi]

That means if we could level-up productivity in the North and Midlands they would produce an extra £110bn of economic output which should give workers a collective pay rise of £165bn or £8,400 per person per year.[xii]

1%

increase in productivity generates...



1.5%

increase in real wage growth

Retail jobs are particularly vulnerable to the economic downturn caused by COVID-19 and the imposed lockdown restrictions. This industry accounts for **15.8%** of the workforce in the North West compared with **11%** in London.

Unemployment and job opportunities

Improving productivity is also closely linked to reducing unemployment and increasing job opportunities. Again, there is a clear regional divide on this in the UK which was apparent before the pandemic and will likely be more apparent once the pandemic is over.

Latest figures show that unemployment in the North East is currently the highest in the UK, at 6.6%, compared with 3.9% in the South East.[xiii] Economic inactivity is also prevalent in the North, where the North East has the highest rate in England, at 23.5% closely followed by the North West and Yorkshire and The Humber.

Rising unemployment in the wake of COVID-19 may yet to be fully realised with the government's job retention scheme masking job losses throughout the UK. Unfortunately, the structure of the workforce around the UK suggests that jobs outside of the knowledge-based sectors predominant in the South East may be more vulnerable.

Retail jobs are particularly vulnerable to the economic downturn caused by COVID-19 and the imposed lockdown restrictions. This industry accounts for 15.8% of the workforce in the North West compared with 11% in London

Zero-hours contracts are another factor contributing to employment inequalities. Workers on these contracts are amongst the most vulnerable to the fallout from the COVID-19 crisis. The North East has by far the highest proportion of workers employed on zero-hours contracts nationally, with 62,000 workers, or 5% of the workforce in 2020 in this situation, more than double the proportion from the previous year.[xiv] The second highest region is the South East, where 3.6% of the workforce is employed on a zero-hours basis.

To compound the problem, workers in the North are more likely to be employed in jobs that cannot be done from home, such as manufacturing and retail. In Burnley and Hull 25.3% and 23.4% of workers are employed in jobs which cannot be done from home. In London and Cambridge this figure falls to 15.9% and 14.3% respectively.[xv]

The latest figures show that unemployment in the North East is currently the highest in the UK, at...

6.6%

which is...

1.7%

higher than the UK average rate

Digital connectivity

Post-COVID, digital connectivity is more important than ever. A widespread shift towards remote working (for those who can) has meant that people across the UK are increasingly reliant on fast and stable internet connections at home. The pandemic has created a paradigm shift in working habits and the use of tools like Zoom and Microsoft Teams are often the principal means for staying in touch and collaborating with colleagues.

The UK lags behind other Western nations in terms of its broadband capabilities and speeds. A study of worldwide broadband speeds by Cable.co.uk placed the UK 47th in the world, and the country is tumbling down the table compared with the previous year's study.[xvi]

Data from Ofcom shows that further regional inequalities divide the UK's access to the latest broadband infrastructure. While major cities and urban areas generally have good access to ultrafast broadband (UFBB), defined as speeds greater than 300 Mbps, Northern regions on the whole fare worse, as do the Midlands, in particular Rutland, parts of Lincolnshire and Derbyshire. For instance, in County Durham and Rutland only around 11% of premises have access to UFBB, while in Cambridge the figure is 85.3%.

In terms of digital connectivity, there is both a North-South and a rural-urban divide. Three of the nine areas with the lowest percentage of premises able to access UFBB are in the mostly rural county of Cumbria: Barrow-in-Furness (0.7%), Copeland (1.4%) and Allerdale (2.3%).[xvii]

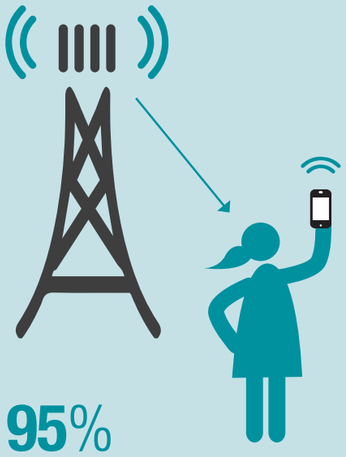
Digital connectivity is not only essential for workers to perform their current jobs in the post-COVID-19 world, but is important in enabling workers to take advantage of the wider job market opportunities that the pandemic has inadvertently created. With more companies willing to take on employees on a remote working basis, people are no longer as tied to jobs in a narrow geographical region close to home. Workers in the North can access job opportunities in more prosperous areas of the country that they previously wouldn't have been able to. This paradigm shift requires levelling-up of digital connectivity in order to create equal opportunities across the country.

It is clear that the Government recognises this importance with over £5bn pledged in the latest National Infrastructure Strategy to support UK-wide gigabit broadband roll-out, extending 4G mobile coverage to 95% of the UK, and ensuring resilient and secure 5G networks.[xviii]

The UK lags behind other Western nations in terms of its broadband capabilities and speeds. A study of worldwide broadband speeds by Cable.co.uk placed the UK **47th** in the world.

£5bn

pledged by UK Government in the latest UK National Infrastructure Strategy to support UK-wide gigabit broadband roll-out, extending 4G mobile coverage to...



95%

of the UK population, and ensuring resilient and secure 5G networks

Socio-economic inequalities can have a profound impact on health and wellbeing. Life expectancy and lifestyle-related health problems exhibit a significant regional imbalance.

According to the Samaritans, many of the underlying causes of high suicide rates can be traced back to inequalities in employment, income and housing.

Health and wellbeing

Socio-economic inequalities can have a profound impact on health and wellbeing. Life expectancy and lifestyle-related health problems exhibit a significant regional imbalance. Due to long-standing social issues and cultural norms, men in Blackpool and Manchester can expect to die on average nine years sooner than those in Kensington and Chelsea.

Tragically, similar regional disparities are also seen in the number of people taking their own lives. The North East has the highest suicide rate in the UK, with 20.4 per 100,000 males committing suicide – more than 50% higher than the rate in the South East.

According to the Samaritans[xix], many of the underlying causes of high suicide rates can be traced back to inequalities in employment, income and housing, which all correlate with challenges facing the levelling-up agenda.

The economic cost of poor health is considerable. Obesity is estimated to cost the UK £27 billion per year[xx], while the economic burden of diabetes to the NHS is around £14 billion annually.[xxi] These impacts have been even more visible when looking at the comorbidities involved with COVID-19 and the particularly harsh impact it has had on the UK.

As part of the effort to improve healthcare nationally, the government has a programme to build 40 new hospitals by 2030 in a package worth £3.7 billion.

The wider economic costs of mental illness in UK factoring in treatment, social support and lower employment has been estimated at...

£94bn

As part of the effort to improve healthcare nationally, the government has a programme to build...

40

new hospitals by 2030 in a package worth £3.7 billion

CASE STUDY: BLACKPOOL

Blackpool exemplifies many of the challenges faced by efforts to level-up. The Index of Multiple Deprivation, the official measure of local relative deprivation, ranks Blackpool as the most deprived area in England.[xxii] Eight of the ten most deprived neighborhoods nationally are in the town.

A surplus of properties in Blackpool which were once guest houses and B&Bs has created an abundance of cheap lodgings drawing vulnerable people who may face other life challenges to the area.

A 2018 annual report by Dr Arif Rajpura, the Director of Public Health in Blackpool, found that 8,000 people move to Blackpool each year, and of the 5,667 claims for housing benefit annually, 86% are made by people with a previous address outside of the town.

The same number of people also move away from Blackpool each year, which the report says means that the town is *"a net importer of people with poorer health, unemployment and precarious labour and a net exporter of people with good health and skilled labour."*

The social and economic issues brought about by the decline of Blackpool are some of the worst in the UK. Unemployment is the highest in the country, with 9.9% of working-age adults claiming unemployment benefits.

Job opportunities are scarce, as the town has struggled to adapt to the loss of its tourism industry.

Impacts from the COVID-19 crisis have been felt particularly strongly in Blackpool. In a town which is still heavily dependent on tourism, the hospitality and leisure sector has been badly affected by the pandemic, and data from July 2020 show that 34% of the workforce in Blackpool has been furloughed.[xxiii]

The impact of levelling-up

With housing identified as the biggest driver of deprivation in Blackpool, efforts to level-up must be heavily targeted in this direction. The town has won investment and initiated several redevelopment projects to transform run down housing estates as part of a holistic plan to rebuild the community. These include a £39.5 million share of the Towns Fund and £8.6 million from the government's 'Getting Building' fund, along with a complete redevelopment of run down tower blocks on the Queens Park housing estate, now replaced with new homes.

Impacts of levelling-up will also be measured in an increase in skills in the area and retaining local talent. To this aim, plans are in place to develop a 'Multiversity' campus in the town centre in partnership with Lancaster University. This will provide employers with access to training programmes which align with the Grand Challenges of the government's Industrial Strategy.

Levelling-up in Blackpool means raising the health prospects and job opportunities for people in the area, tackling the complex relationship between economics and health. The oversupply of affordable housing and undersupply of jobs has led to people gravitating to Blackpool and making the town effectively a halfway house for some of the country's most disadvantaged people.

CASE STUDY: STOKE ON TRENT

Like many towns in the Midlands and the North, Stoke on Trent suffered from the 1980s onwards as the UK economy shifted away from manufacturing and towards service-led industries. In the wake of the decline of the manufacturing and mining industries, Stoke experienced years of hardship and failure to modernise from its previous guise as a manufacturing hub and centre of the pottery industry.

The Index of Multiple Deprivation ranks Stoke as the 13th most deprived local authority in England, with over 50% of areas in the city classified amongst the most deprived 20% in the country.[xxiv]

A report by Staffordshire University Business School for the Stoke-on-Trent Hardship Commission suggests that the city faces an increased threat of poverty and destitution following the pandemic. Universal credit claims have risen by 24%, and food bank use by 23%, and it's estimated that around 27,000 jobs in the city could be lost.[xxv]

Health problems are a major factor in Stoke's current status as a city ranked high on the Index of Multiple Deprivation. Life expectancy for men is 76.4, and this value has not changed much in the past 10 years, while the more prosperous areas of the UK have seen life expectancy rise.

The impact of levelling-up

Despite these problems Stoke is seeing the green shoots of recovery, and the impacts of levelling-up are beginning to be felt.

Unemployment in the city stands at 4.7%, below the national average of 4.9%[xxvi], and employment growth preceding the COVID-19 crisis was high. The UK Powerhouse report in January 2020 by the law firm Irwin Mitchell shows that Stoke has the highest employment growth in the UK, ahead of even London, Manchester and Birmingham. With 8,000 jobs created in the past fives years, the report predicts year-on-year employment growth of 2.2%.[xxvii]

High quality education provided by Staffordshire University and Stoke on Trent College as well as infrastructure investment, such as the A500 bypass have given the city a strong platform for further large scale investment. The results have been swift, with Michelin and Wedgewood both returning to the city, providing a much needed boost to the local economy.

Despite the progress made so far, the report published by Staffordshire University Business School highlights the considerable work still to be done to level-up the Stoke on Trent economy. Among the recommendations made are job and training guarantees for all long term unemployed people and a job rotation and skills investment model for workers to promote growth and productivity and create a sustainable labour market.[xxviii]

As the economic fortunes of Stoke begin to turn a corner, it's vital that this success filters down to ensure that pockets of deprivation and poor health do not become embedded in the city.

CONSTRUCTION'S ROLE IN LEVELLING-UP

In the previous section we set out some of the levelling-up challenges the UK faces, in this section we look at how the construction sector can play a role in solving them and how that role can be maximised through innovation and modern methods of construction.

We now, of course, have the additional challenge of stimulating growth more widely and our post-COVID recovery.

Construction is one of the most important sectors of any well-functioning modern society by performing two vital functions. Firstly it provides direct employment, investment and revenues to the national and local economy and secondly it 'enables' important social, transport and fundamental infrastructure to be delivered.

It is because of skilled workers and innovative construction firms that hospitals can be delivered, schools built, the lights switch on and we can travel to work and see friends and loved ones by road, rail and air.

In 2020 the Prime Minister Boris Johnson reaffirmed his commitment to *"build back better"*, *"renew our infrastructure"* to make the UK a *"world leader in low cost clean power generation"* and to *"level-up"*. The recently published Construction Playbook adds to this narrative, setting out clear expectations and advice from definition to operation for both industry and the government to follow.

The Chancellor, Rishi Sunak, has made clear in the 2021 Budget that he also believes there is a clear role to play for infrastructure and construction in levelling up. From the objectives of the new National Infrastructure Bank to the £4bn 'Levelling Up' fund, it is clear that growth driven by investment in the built environment is intended to address economic inequality in the UK.

As has been clearly set out in the previous section there is an obvious health, opportunity, connectivity and productivity divide between London, the South East and most of the rest of the UK. Targeted investment in 'shovel worthy' schemes will be an important contributor to levelling up and closing the substantial regional divide.

Direct benefits

Construction adds £117bn directly to the UK's economy every year, with 325,000 firms employing 2.3 million workers which is equivalent to 10% of all employment.[xxix] This economic contribution is nearly 70% more than that of the life sciences sector with the number of employees twice that of the UK's hospitality, food and drink sector.

The sector's importance becomes even more significant when you look at the data on a regional level. In relative terms, employment from construction is 25% more important in the North West, 20% more important in Yorkshire and the Humber, 45% more important in the West Midlands and 58% more important in the East of England.[xxx]

As construction moves towards a construction to production and manufacturing approach there is the opportunity to strategically locate a number of factory "hubs" around the UK, particularly in areas in need of levelling-up and investment, to boost employment and the local economy. Additionally these hubs could become new centres for international exports to serve some of the £9 trillion international construction market.

Employment from construction is more important by..

25%
in the North West

20%
in Yorkshire and the Humber

45%
in the West Midlands

58%
in the East of England

If new hospitals implement best practice and lessons learned to achieve at least median costs and space utilisation it would mean savings of...

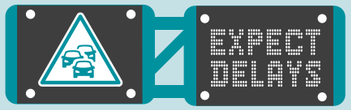
£1bn

per year

and enough additional space for thousands more hospital beds

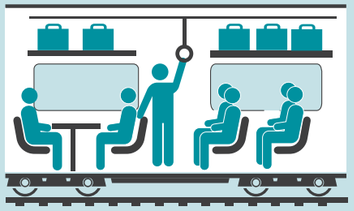
Taking Crossrail as an illustrative example of what schemes like Northern Powerhouse Rail, the Midlands Rail Hub and East West Rail might achieve...

£4.2bn



in commuting time savings and...

£30bn



from widening job opportunities

Indirect benefits

As well as the direct benefits of construction activity that can assist in levelling-up, there are also indirect benefits which result from the projects delivered. Research has shown that investment in infrastructure (social, energy and transport) can be a powerful lever that governments can use to boost social and economic development.

As well as the general indirect economic benefits, targeted projects can help to tackle particular issues and areas of concern.

Schools

There is strong evidence that high-quality school infrastructure facilitates better instruction, improves student outcomes, and reduces dropout rates among other benefits.[xxxii] A study from 2016 in the UK found that the physical design and quality of classrooms and schools has a 16% impact on educational outcomes.[xxxiii] This can mean the difference between a pass and a fail and students being able to take the career path of their choice or not.

Hospitals

As well as delivering new high-quality hospitals so that local people can benefit from their expertise, facilities and services, new builds present an opportunity for boosting productivity through better use of space and layouts and modularisation of components which can be created in areas most in need of levelling-up.

A review of NHS productivity by Lord Carter[xxxiv] found that the variation between per square metre operating costs varied from £105 to £970 with space allocated to non-clinical (i.e administration and management) ranging between 12% and 69%. These variations are partly down to the layout of the building and wards, how they have been designed and things like thermal efficiency. If the new hospitals implement best practice and lessons learned from other Trusts to achieve at least median costs and space utilisation it would mean savings of £1bn per year and enough additional space for thousands more hospital beds.

Transport

Transport infrastructure is well known to improve access to jobs, allows business to access a wider pool of talent, reduce commuting times and carbon emissions. Taking Crossrail as an illustrative example of what schemes like Northern Powerhouse Rail, the Midlands Rail Hub and East West Rail might achieve:

- £4.9bn of business time savings.
- £4.2bn in commuting time savings.
- £872m from reducing unemployment.
- £30bn from widening job opportunities.

Given the economic and societal benefits that construction projects and programmes bring many people, politicians and decision-makers are understandably keen to see schemes and hence their benefits delivered as quickly as possible. However, to deliver that paradigm shift in delivery the industry will have to overcome a number of challenges which will also require the active support of government.

INNOVATING TO LEVEL-UP

The last three decades have seen little innovation in how construction projects and programmes are delivered with productivity only increasing by 1% between 2000-19, compared to 32% for manufacturing and 105% for scientific research. However, there are green shoots that should give us hope.

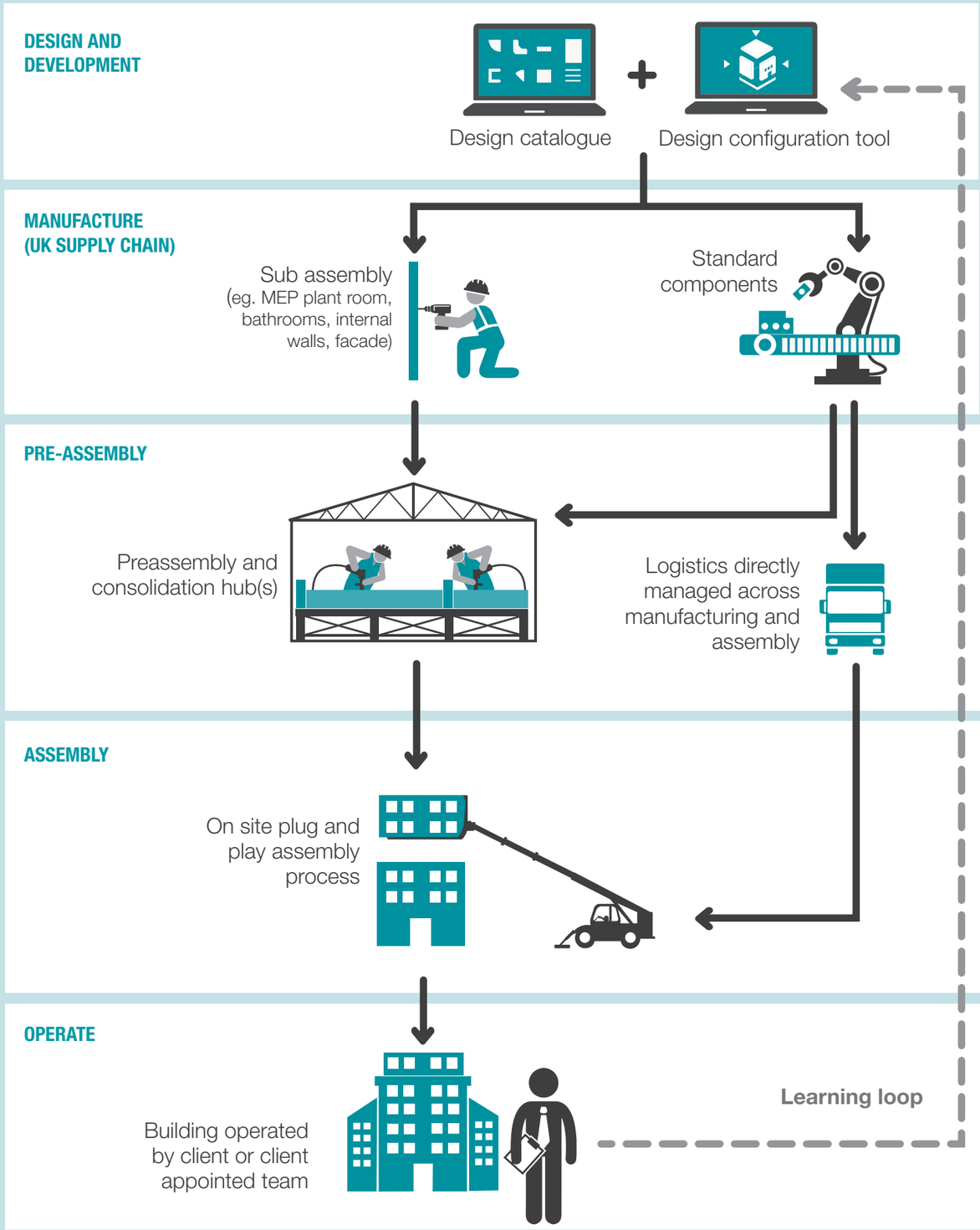
While some clients are willing to try new innovations, approaches and techniques others air on the side of caution sticking with what they know and maintaining a relatively transactional relationship with their supply chain partners.

Given the culmination of pandemic-induced social distancing measures, a political desire to "build, build, build" to level-up, a zeal in government to reform procurement as shown by the recently published Transforming Public Procurement Reform Green Paper and the Construction Playbook which sets out a new outcomes and relationship based approach there is now a golden opportunity for things to be done differently.

That would result in a step-change for construction productivity which not only makes the industry more sustainable and resilient, but would help the country address some of its regional challenges and aid economic recovery post-COVID-19.

One successful way of achieving this is by 'moving from construction to production' and embracing proven approaches from manufacturing as well as earlier construction projects which have used a 'modern methods of construction' approach to deliver the forward pipeline of major projects.

CONSTRUCTION TO PRODUCTION DELIVERY APPROACH



Mace's construction to production approach

Embracing approaches from manufacturing – as well as innovating traditional construction methodologies – means that on site project delivery can be revolutionised. This means we can build important social or transport infrastructure faster, more efficiently, with a lower carbon footprint while levelling-up the UK directly and indirectly.

Mace's flexible 'kit of parts' approach allows scalable manufacturing, with products, components and sub-assembly elements procured, manufactured, pre-assembled and compiled at our pre-assembly and consolidation hubs. Using this 'hub-and-spoke' approach, with key partner facilities strategically located near product and project sites, we can both ensure that we can deliver regionally, and that all investment from the taxpayer benefits the UK regions and further supports levelling-up.

Logistics and materials are carefully managed from point of production to ensure "just in time" deliveries to site for "plug and play" assembly.

Learning and experiences fed back into the process so that productivity, quality and speed of delivery can be improved in future iterations.

This type of approach can reduce construction time by 50%, boost regional production and manufacturing to level-up, reduce costs as the iterations of the programme progress and help the UK achieve its Net Zero Carbon ambitions. But to achieve these benefits on a large scale we need the support of the Government and for it to take some positive policy decisions to support construction and accelerate change.

Building to Net Zero Carbon

The Government's commitment to making the UK economy Net Zero Carbon by 2050 formalises a growing pressure to transform how we deliver and operate the built environment to reduce our carbon emissions. This also offers some vital opportunities to stimulate economic growth in the UK's 'levelling up' areas.

The drive to reduce carbon from the construction process – both in terms of embodied carbon and operational carbon – can be used as a driver for the levelling up agenda. By investing in low carbon transport solutions and incentivising the delivery of high-tech manufacturing facilities, we can drive 'green growth' in the areas that need it most, addressing economic and regional inequality as we respond to the climate emergency.

The Siemens Gamsea blade turbine factory in Hull is an excellent example of how the creation of green industrial centres can create sustainable, high quality jobs and help the UK's priorities of levelling up and delivering Net Zero Carbon.

Other major carbon challenges that face the built environment – such as the need to address household emissions in the UK – could also be leveraged to support the levelling up agenda. Homes in the UK use 30% of our energy and emit 20% of our carbon dioxide emissions; and if we are to meet our net zero ambitions the vast majority of the 28 million homes in the UK will need extensive retrofit work.[xxxv]

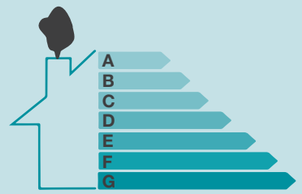
Poor quality housing and home insulation also drives inequal costs and living standards across the UK. It is estimated that spending £10 billion on poor quality housing in England alone would save the NHS around £1.4 billion per year.[xxxvi] Retrofit measures will help the Government to meet their progress against statutory fuel poverty targets

The Construction Leadership Council's proposed solution - a national retrofit programme - would create an estimate 500,000 jobs in every region and community across the UK. A programme of this scale would require huge investment in training and skills; and if this investment was targeted in the areas that most needed it, it would support the UK Government's wider push towards levelling up.

Homes in the UK use 30% of our energy and emit...

20%

of our carbon dioxide emissions



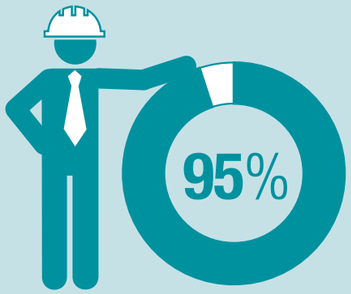
A national retrofit programme would create an estimated...

500,000

jobs across every region and community in the UK

£351m

was spent in the construction sector on R&D in 2018 with...

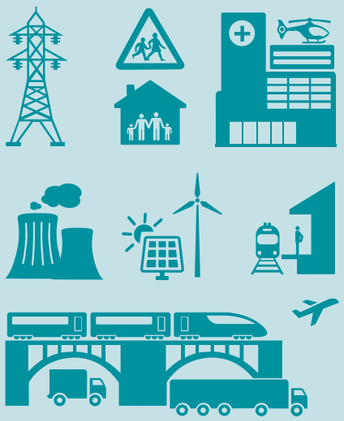


of funds coming directly from construction companies

Increasing government support for construction R&D will be essential if the UK is to level up and efficiently deliver its...

£600bn

of infrastructure investments



Accelerating industry change

Investment in R&D is a crucial component of progress and innovation with the state playing a central role in helping to drive and encourage innovation.[xxxvii] Given the high-priority and importance of the construction sector in realising the government's levelling-up objectives and to *"build back better"* from the COVID-19 pandemic there is a miss-match between government R&D spending and its strategic objectives.

£351m was spent in the construction sector on R&D in 2018[xxxviii] with 95% of funds coming directly from construction companies even though they have famously slim margins. This is around double the amount spent in 2015 showing the sectors commitment to boosting innovation and transforming itself for the future.

£37.1bn was spent by the UK state or non-profit organisations in 2018. 22% of this went to health (predominantly pharmaceuticals), 15% went to defence, with only 7% going to *"transport, telecoms and other infrastructure"* which includes construction. 41% of this spending is also concentrated on the *"golden triangle"* between Oxford, Cambridge and London.

Given construction's critical role in the country's future plans and its large regional geographical spread, increasing government support for construction R&D will be essential if the UK is to level up and efficiently deliver its £600bn of infrastructure investments. Illustratively if we were to increase "transport, telecoms and other infrastructure" investment to that of the defence sector it would mean an additional £3bn of support for construction.

As the Government looks to increase its R&D spending from 1.7% to 2.4% by 2027 it needs to ensure that additional funding is simply not absorbed further by the UK's already heavily funded biotech sector.

Procurement

More than £255bn[xxxix] a year is spent by taxpayers on procuring the expertise, knowledge and resources of the private sector including many in the construction sector. Now we have left the transition period with the EU the Government can decide to use its vast purchasing power for its strategic benefit and to further its levelling-up aims.

The recent Transforming Public Procurement Reform Green Paper and Construction Playbook propose great steps forwards in public procurement and a departure from the *"best taxpayer value"* approach – can often confused with "cheapest" – to one focussed on outcomes and wider societal benefits.

Procurement should look at corporations' commitment to social value, their impact on the levelling-up agenda and how they will boost productivity and deploy real innovations on projects.

By prioritising the creation of social value through procurement, we can ensure that investment is supporting and benefiting every community it is intended to serve. Schemes can be made 'shovel-worthy' by ensuring that social value outcomes are built into their objectives from the beginning.

The traditional hierarchical relationship between clients and their supply chains should also be avoided and instead replaced with intelligent and capable clients who can clearly articulate desired outcomes; which should include a contribution to levelling-up the UK.

HOW CONSTRUCTION CAN ACCELERATE LEVELLING-UP

Given the impact of the pandemic, the already stark regional divide seen in the UK as well as the important role social and transport infrastructure plays, improving how projects and programmes are delivered to maximise levelling-up should be a key priority of both industry and government.

Here we present modelling by a former Bank of England economist for Mace which looks at the impacts of two possible types of interventions on levelling-up: 1) wider use of modern methods of construction and 2) the creation of regional manufacturing hubs in the North and Midlands which form part of a MMC strategy.

Modern methods of construction

The Government publishes its plans for future large-scale infrastructure and construction investment. In the most recent publication (the 2020 National Infrastructure Strategy), 700 projects and programmes were listed. It was estimated that around £600bn of investment would be made over a 10 year period across many varied types of project.

As part of the Government's drive to be transparent about its infrastructure plans, it publishes a future looking infrastructure and construction pipeline to help *"...boost market confidence and help the sector with business planning"*.[xl] This includes sending messages to the infrastructure and construction industry about how the Government wants to approach future investment and hopefully for longer term investments in new approaches, innovations and R&D to be made.

The new super-deduction policy, announced in the Spring 2021 Budget, offers the opportunity for business to invest in new plant, technology and equipment in an extremely cost effective way. It is a clear sign that the Treasury is looking to drive investment across the industrial supply chain. It is now up to the private sector to leverage this benefit in a way that drives positive outcomes for everyone.

But if we do manage to make a wide scale change in delivery approach what is the potential prize in increased efficiency from these new techniques and what could that do for levelling-up?

Modelling analysis for this insights report provides an answer to this question. There will always be uncertainty around such modelling results and that should be kept in mind. Because new construction techniques are not widespread, the full extent of their benefits remains somewhat unknown. Nevertheless, there are enough indicative numbers to use as assumptions in an illustrative analysis.

Headlines from the National Infrastructure Strategy state that:

> There are over **200** construction projects in the 2021/22 national infrastructure and procurement pipeline (which is similar to the subsequent years).
>
> These projects have a total estimated contract value of **£27bn.**
>
> More than a third of the value of these projects relate to transport infrastructure, and more than a quarter are in the utilities sector.

Assumptions were applied to this baseline data to illustrate how efficiencies from modern methods of construction could affect the costs and speed of delivery of these projects. The assumptions about efficiencies were taken from Mace's internal data which show that MMC techniques could reduce the cost of building modularised infrastructure (social and transport) by 17% and reduce the time for delivery by 50%.

In addition to these assumptions, other data - all from publicly available Government sources - used in the modelling was:

- Information on how likely the typical infrastructure project is to run to cost or to budget.
- Information on the capital expenditure on schools over the last decade.

Using these inputs our modelling reaches two conclusions that clearly demonstrate why new construction techniques - and changes to procurement and the investment the R&D necessary to develop them - are so important:

1. **One third of the projects in the 2021/22 procurement pipeline are likely to either be delivered late or go over budget** (or both). This will involve contract values of £5.7bn.

2. **£2.8bn could potentially be saved with the wider application of Modern Methods of Construction techniques.** This is enough money to triple the investment going into the North West every year or increase tenfold the amount of investment into the East Midlands (see Table 1, below). .

3. **This £2.8bn could be used to level-up spending on construction projects across regions.** The procurement pipeline suggests that the English region with the highest per head of population spending on construction projects is the East of England (£366 per head). The English regions with the lowest per head of spending on construction projects are the East Midlands (£53 per head) and Yorkshire and the Humber (£106 per head). £2.8bn of savings allocated to these regions would mean that the same per head expenditure as is planned in the East of England.

Table 1: Procurement pipeline and potential MMC savings for re-investment by region

Region	Procurement pipeline 2021/22 (£m)	Percentage of regional pipeline	Potential savings from MMC for reinvestment (£m)
Scotland	£562	5%	£154
Northern Ireland	£847	8%	£233
Wales	£465	5%	£128
North East	£512	5%	£141
North West	£788	8%	£216
Yorkshire and The Humber	£581	6%	£160
East Midlands	£256	2%	£70
West Midlands	£661	6%	£182
East of England	£2,283	22%	£627
London	£1,355	13%	£372
South East	£1,340	13%	£368
South West	£599	6%	£165

Note that regional pipeline excludes some procurement spending that is attributed to the whole of the UK

REGIONAL CONSTRUCTION HUBS

A key element of the approach to MMC suggested by Mace is the creation of a number of regional factories or consolidation hubs which can support the delivery of social and transport infrastructure in the North, Midlands and East of England while aiding levelling-up.

New modelling for this report suggests that regional hub approach to the construction pipeline could mean 124,000 high-quality regional jobs[xli] are created meaning a regional economic boost of £4.9bn from this employment which would make a meaningful impact on levelling-up, opportunities and unemployment levels.

To maximise the impact of those new centres we have created a new bespoke index using the official Index of Multiple Deprivation as well as the location quotients (these measure the relative strength of a sector compared to the UK average) for manufacturing and construction to suggest the optimum six locations where hubs/factories could be created.

Below you will find the region of the UK and the location suggested by our 'regional construction hub index':

1. Ashfield - East Midlands
2. Barnsley - Yorkshire and The Humber
3. Stockton-on-Tees - North East
4. Oldham - North West
5. King's Lynn and West Norfolk - East
6. Sandwell - West Midlands

RECOMMENDATIONS

We have clearly argued about the need for levelling-up the UK and what it could mean for incomes, jobs, opportunity and productivity. The construction industry is essential to levelling-up and our post-COVID recovery, but without its reform and improvements in productivity the UK will fail to build back better and will fail to level up.

But to accelerate those benefits and make a meaningful contribution to levelling-up, the construction sector needs to change how it delivers, how services are procured and how research and development funding is allocated. Below we set out ten practical policy suggestions which build on the recent Budget, Construction Playbook, National Infrastructure Strategy and Procurement Reform Green Paper which we hope will result in real change.

1) Target investment in worst hit areas

Unless we are careful, many of the UK's most deprived areas could face further long term economic scaring from the impact of the pandemic.

The Government's proposed Levelling Up fund is a good start, but we need to ensure that the funding is direct towards those areas most severely affected by the pandemic so they can invest in transport and social infrastructure, retraining, upskilling and to support inward investment from the private sector in things like construction manufacturing hubs.

2) Regionalised MMC

An MMC approach which heavily uses a manufacturing and offsite approach has many benefits including better quality, contribution to achieving Net Zero Carbon and more resilience in delivery. Importantly it can make a major contribution to levelling-up.

Many areas with high levels of deprivation[xlii] are areas which have gone through de-industrialisation and loss of manufacturing jobs. Construction manufacturing hubs (like those outlined earlier in our report) can tap into that heritage and skills base to deliver schemes right around the UK while reducing unemployment and creating well paying jobs.

The new National Infrastructure Bank could be used as a vehicle to deliver a substantial pipeline of work to support the creation of regional hubs.

3) A re-skilling programme

Unfortunately, the economic impacts of the pandemic will likely see people losing their jobs and unemployment rising. This will not happen evenly around the country with some areas, particularly outside the South East, likely to be more severely impacted as we have set out earlier in this report. This presents an opportunity to help address the construction skills challenge and upskill/retrain those who have sadly fallen on hard times through a targeted MMC training programme so that they can play a full part in the delivery of the UK's substantial infrastructure and construction pipeline.

4) Focus on 'shovel worthy' rather than 'shovel ready' schemes

Infrastructure investment is broadly accepted as a good way to help stimulate economic growth and job creation. However, it is important to remember that not all schemes are created equal and some will deliver greater benefits than others.

Instead of progressing the schemes which are most 'shovel ready' we instead should focus on those which are 'shovel worthy' and are likely to deliver the greatest benefits and outcomes for our post-COVID world. We should particularly focus on homes, hospitals and schools, all of which unlock huge benefits for local communities.

5) R&D funding in construction

£37.1bn was spent by UK taxpayers or non-profit organisations on R&D in 2018, 22% going to health (predominantly pharmaceuticals), 15% to defence, with only 7% going to "transport, telecoms and other infrastructure" which includes construction.

As the Government looks to increase its R&D spending from 1.7% to 2.4% by 2027, we need to break from the past and ensure the construction industry receives its fair share and recognition for the important role it will play in all our futures.

6) Revolutionise procurement

The Green Paper on reforming public procurement and the Construction Playbook make many welcome suggestions on how to improve the way the UK procures large and complex projects now that we have left the EU. Those important principles include moving to a focus on outcomes, the possibility of a tribunal service, a fair split of risk and reward and the assessment of how the bidders contribute to the *"public good"*.[xliii] Public good must include contribution to levelling up as well as innovation and Net Zero Carbon.

7) Reward innovation

When procuring projects and creating contractual relationships, innovations must not only be encouraged but rewarded. At bid stage a dedicated innovation funding pot could be created so that the best elements of all bids can be incorporated into the solution with unsuccessful bidders rewarded for their contributions.

Similarly, if successful partners deliver projects earlier than expected or with better outcomes than envisaged contracts must reward that. Sometimes contracts can result in perverse incentives whereby it is more commercially advantageous not to deploy innovations, this must be avoided if we are to level up and build back better.

8) Delivery of a national retrofit programme

Alongside revolutionising how we build; we must recognise that there is a huge opportunity for sustainable growth and skills investment as we look to achieve the UK's net zero ambitions.

By delivering an ambitious national retrofit programme to address the carbon emissions of the UK's existing housing stock – and by investing training and skills in the right areas – we can create 500,000 new jobs and billions of pounds of growth in the regions that need it most.

We must also acknowledge that if we do not invest appropriately, we risk stranding home owners in housing that they will not be able to sell in the future as they won't meet emission requirements.

By delivering an ambitious national retrofit programme to address the carbon emissions of the UK's existing housing stock – and by investing training and skills in the right areas – we can create 500,000 new jobs and billions of pounds of growth in the regions that need it most.

9) Green Book reform

For a number of years there have been concerns about how the UK's Green Book appraisal process is being implemented, disadvantaging areas which are economically weaker.

Appraisal measures around broader social value and outcomes in the Green Book are not being used effectively, and many parts of the public sector do not have the maturity or resources to implement them effectively and demonstrate the real value of infrastructure delivery to the Treasury outside of a simple benefit/cost ratio assessment.

The recent proposed changes to the Green Book to address these issues will be helpful, but far more clarity is needed about the specific objectives of 'levelling up' and how these should impact decision-making. The additional support promised in the recent review must be introduced at pace to ensure outcomes improve as quickly as possible.

10) Invest in both digital and physical connectivity infrastructure

Unfortunately, as long as there is such a fundamental inequality in access to digital connectivity and physical connectivity between areas in the UK, 'levelling up' will be exceptionally challenging.

By investing in both low carbon transport schemes and improved digital connectivity in the regions that need them most, the UK Government can significantly improve the economic productivity of the North and the Midlands.

Again, the new UK Infrastructure Bank will have a key role to play in facilitating joint private sector and public sector funding to drive infrastructure delivery.

REFERENCES

i. Office for National Statistics, Labour Market Data

ii. Bradshaw Advisory calculations based on Office for National Statistics NUTS1 Labour Market Data

iii. World Economic Forum and Boston Consulting Group, The Role Of Infrastructure Stimulus In The Covid-19 Recovery And Beyond

iv. Bradshaw Advisory calculations for Mace. 90% work offsite. Boston Consulting Group: £1bn infrastructure investment creates 10,000 jobs.

v. Institute for Fiscal Studies, Catching up or falling behind? Geographical inequalities in the UK and how they have changed in recent years, August 2020

vi. HM Revenue & Customs, Coronavirus Job Retention Scheme Statistics: July 2020

vii. UK Regional Productivity Differences:An Evidence Review, Industrial Strategy Council, Feb 2020

viii. Office for National Statistics, Subregional productivity in the UK, Feb 2020

ix. Productivity in Sheffield City Region, C. Beatty and S. Fothergill, Sheffield Hallam University, May 2020

x. Fraser of Allander Institute, University of Strathclyde, 2019, https://fraserofallander.org/uk-economy/link-labour-productivity-wage-growth-uk/

xi. Office for National Statistics, Regional Gross Value Added (income approach)

xii. Bradshaw Advisory calculations for Mace using ONS data

xiii. Office for National Statistics, Labour market in the regions of the UK: December 2020

xiv. Office for National Statistics, People in employment on zero hours contracts, Aug 2020

xv. Centre for Cities, Where are the workers that can work outside the home? May 2020

xvi. Worldwide broadband speed league 2020, https://www.cable.co.uk/broadband/speed/worldwide-speed-league/

xvii. Ofcom, UK home broadband performance, 2019

xviii. National Infrastructure Strategy 2020

xix. Suicide Statistics Report 2019, Samaritans

xx. Public Health England, Health matters: obesity and the food environment, 2017

xxi. Diabetes.co.uk, Cost of Diabetes, 2019

xxii. English Indices of Deprivation, Ministry of Housing, Communities & Local Government, 2019

xxiii. HM Revenue & Customs, Coronavirus Job Retention Scheme statistics: July 2020

xxiv. English Indices of Deprivation, Ministry of Housing, Communities & Local Government, 2019

xxv. A disappearing safety net: post Covoid-19 crisis and its impact on poverty and disadvantage in Stoke on Trent - Report to Stoke Hardship Commission, Staffordshire University, 2020

xxvi. Nomis, Official Labour Market Statistics, 2020

xxvii. UK Powerhouse, Irwin Mitchell, Jan 2020

xxviii. A disappearing safety net: post Covoid-19 crisis and its impact on poverty and disadvantage in Stoke on Trent - Report to Stoke Hardship Commission, Staffordshire University, 2020

xxix. Office for National Statistics, Labour Market Data

xxx. Bradshaw Advisory calculations based on Office for National Statistics NUTS1 Labour Market Data

xxxi. Newfarmer, R. and Sztajerowska M. (2012), 'Trade and Employment in a Fast-Changing World', in OECD (2012), Policy Priorities for International Trade and Jobs, Douglas Lippoldt (ed.), OECD

xxxii. World Bank, Why education infrastructure matters for learning, https://blogs.worldbank.org/education/why-education-infrastructure-matters-learning

xxxiii. Why education infrastructure matters for learning, P Barrett et al, University of Salford

xxxiv. Operational productivity and performance in English NHS acute hospitals: Unwarranted variations An independent report for the Department of Health by Lord Carter of Coles, February 2016

xxxv. https://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2020/12/CLC-National-Retrofit-Strategy-final-for-consultation.pdf

xxxvi. 2CCC 2016. Next steps for UK heat policy - Committee on Climate Change - October 2016

xxxvii. Mazzucato, 2018

xxxviii. Office for National Statistics, Gross domestic expenditure on research and development, UK, 2018

xxxix. Public procurement and contracts, House of Commons Briefing Paper

xl. IPA, November 2018, Analysis of the National Infrastructure and Construction Pipeline, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759222/CCS207_CCS1118987248-001_National_Infrastructure_and_Construction_Pipeline_2018_Accessible.pdf

xli. Bradshaw Advisory calculations for Mace. 90% work offsite. Boston Consulting Group: £1bn infrastructure investment creates 10,000 jobs.

xlii. Index of Multiple Deprivation, MHCLG

xliii. Green Paper: Transforming public procurement, Cabinet Office, December 2020

xliv. Green Book Review 2020: Findings and response

xlv. The Imperial Treasury: appraisal methodology and regional economic performance in the UK, D Coyle and M Sensier, University of Cambridge, July 2018

CREDITS

Author: Tom Lees, Managing Director, Bradshaw Advisory

Designer: Jennie Sanders, Graphic Designer, Mace

Mace
155 Moorgate
London EC2M 6XB

+44 (0)20 3522 3000

North America
1350 Broadway,
Suite 408 New York,
NY 10018

+1 917 436 4600

Australia
Suite 1703, Level 17,
44 Market Street, Sydney,
NSW 2000

+61 2 9126 8010

MENA
Aspect Tower: Business Bay
Executive Towers Zone A Level
21: Office No. 2104 Sheikh
Zayed Road, Dubai

+971 4 447 0207

India
#703, Vatika City Point, M.G.
Road, Gurgaon-122 002,
Haryana, India New Delhi –
110075 India

+91 124 436 8216

Sub-Saharan Africa
Floor 2, Building 1
Waverley Office Park
15 Forest Road
Waverley, Sandton 2199

+27 (0) 10 591 0222