

The background of the entire page is a satellite-style map of the world with a network overlay. The map is primarily blue, with the landmasses of North and South America highlighted in a vibrant orange-red. A complex web of thin, light blue lines crisscrosses the map, representing a global network or data flow. The lines are most dense and bright where they converge on the Americas.

Building a resilient future

Technology and the COVID-19 economic recovery

Executive summary

December 2020

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The COVID-19 pandemic has fundamentally and irreversibly altered how we live and work, seriously testing the nation's digital capacity and cybersecurity. The dramatic shift in working patterns caused by the lockdown has been the main driver of this. And this is not just for the short term; a range of sources suggest that these changes will have a lasting impact on levels of remote working, and this in turn could permanently shift the geography of the country.

Whilst this report highlights the real challenges faced by many businesses, and by Government itself, the main argument is that there is now a real opportunity to build resilience in the UK's digital infrastructure. To seize this opportunity, the Government should engage in an active strategy of embracing and facilitating this shift towards remote working as it carries the potential for substantial social and economic benefits, including:

- **Addressing the UK's productivity and pay issues through 'remote' internal mobility** – secure and robust remote working capacity increases an organisation's geographical range of potential employees, and as a result the variety of skillsets that it can access. Better movement of skills across the country could help address the UK's issues around productivity and give Britain a pay rise.
- **Levelling up the country** – a previous report by WPI Economics found that over 75,000 expert graduates were lost from the northern workforce in the 10 years leading to 2017. However, polling suggests that a permanent increase in remote working following the lockdown will move large numbers of people away from cities such as London towards rural areas and seaside towns. As a result, higher earners in various industries could be more likely to live in economically underperforming parts of the country in the future, rather than simply being concentrated in and around London and major cities. This would help improve those local economies and the lives of those in 'left behind' areas.
- **Wellbeing** – with support from employers, remote working can improve work-life balance, help to enhance people's wellbeing and reduce stress, particularly if it allows them more flexibility in where they can live.
- **Green growth** – remote working can reduce the UK's stubbornly high motor vehicle emissions, one of the major barriers to achieving the UK's target of net zero carbon emissions.
- **A more efficient public sector** – the innovative IT solutions which support remote working can improve cybersecurity, facilitate the safe transfer of data between and within organisations, in addition to underpinning more flexible ways of working – helping the Government deliver its vision of a truly digital government. Furthermore, implementing remote working at scale can help the Government continue to save billions of pounds for the taxpayer by reducing the size of the public sector estate.

At present, the digital infrastructure of employers – especially in the public sector – is the major barrier to realising the benefits of remote working, rather than the UK's network infrastructure. For example, many large businesses and public sector organisations with legacy systems use a perimeter-based office model which is unsuited to supporting secure remote working at scale.

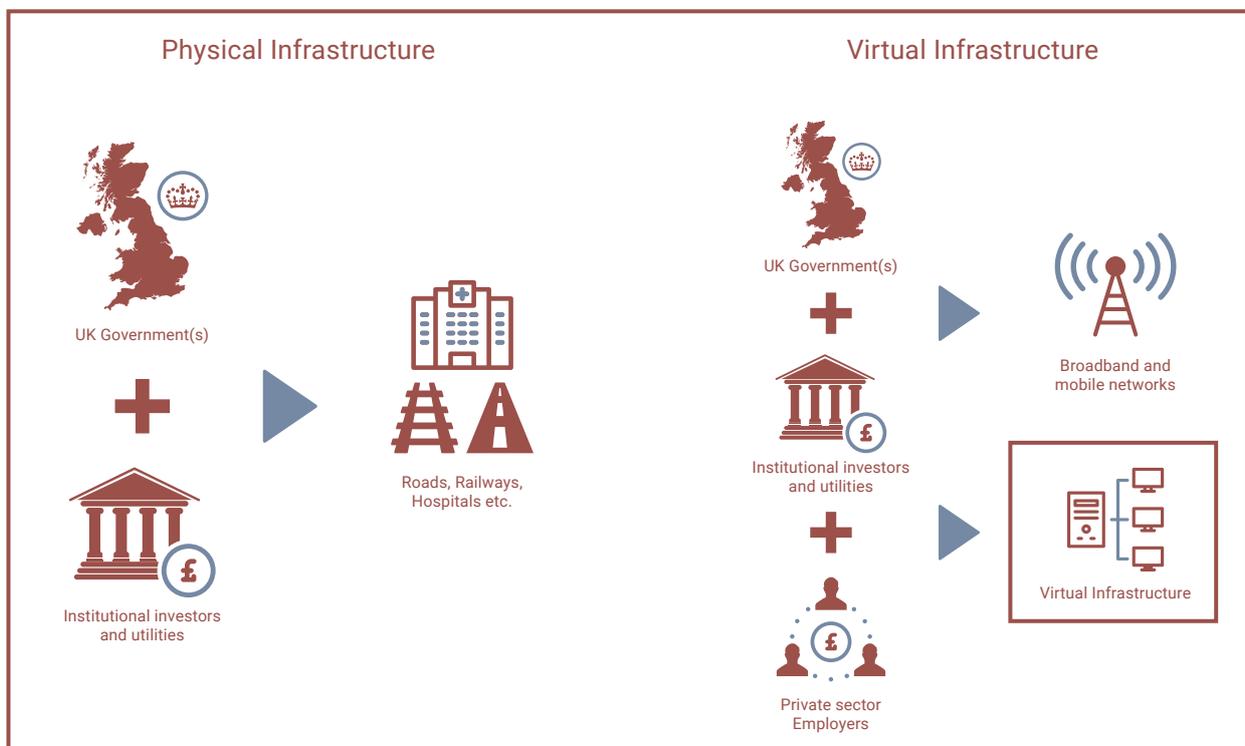
These shortcomings have been laid bare by the COVID-19 crisis, with dire consequences for organisations, workers, customers, and the taxpayer. Polling conducted by Opinium for WPI found that almost 20% of those furloughed believe this happened because their employer lacked the IT infrastructure to support remote working. We estimate that HM Treasury could have paid up to £6bn in furlough payments to staff who were unable to work as a result of poor IT infrastructure.

Many companies have on face value adapted well to the crisis, quickly implementing remote working at scale. However, there are reasons to be concerned that this may have come at the expense of security in some cases, which is a significant risk to take given the deteriorating cyber threat environment. We know from Government-commissioned polling that there is still an absence of basic cybersecurity procedures and technical controls in place across the business population. Any short terms savings from not investing in security are illusory - the annual cost of cyber-attacks for a

medium sized business could go up by as much as £5,700 based on the increased rate of attacks seen during the peak of the first lockdown. The potential change in security dimensions attached to working from home mean that fully secured systems and processes based on 'zero trust' need to be a default option for all businesses.

These are problems for businesses and organisations – but they are also problems for society at large, particularly as we begin to design solutions to grow our economy out of this crisis. There are concrete actions that the Government can take to ensure that secure remote working capacity can be a reality across our economy. In order for these measures to be put into place, Government and policymakers must first embrace a new understanding of digital infrastructure as also encompassing 'virtual infrastructure', meaning secure remote access to data at the level of individual organisations. Subsequently, the Government should request that the National Infrastructure Commission (NIC) develop a strategy which makes a series of recommendations to strengthen virtual infrastructure across the economy.

Figure 1: Virtual infrastructure



Our recommendations:

1. The Government should take the lead in significantly upgrading its own virtual infrastructure.
 - a. We recommend that the Government invests in departments and agencies to ensure that ultimately all desk-based public sector workers can securely and remotely access their data and applications at any time, from any device, anywhere.
2. The Government should actively support the strengthening of virtual infrastructure in the private sector.
 - a. We recommend that the Government update the National Infrastructure Commission's remit to recognise this new conception of digital infrastructure as a priority area which must be addressed by policy and with Government investment.
 - b. We recommend that a voucher – along the lines of the Cyber Essentials grant – be provided to all, or a subset, of businesses to fund vital upgrades to the virtual infrastructure of the business population.