RURAL LENS REVIEW

UK Wireless Infrastructure Strategy
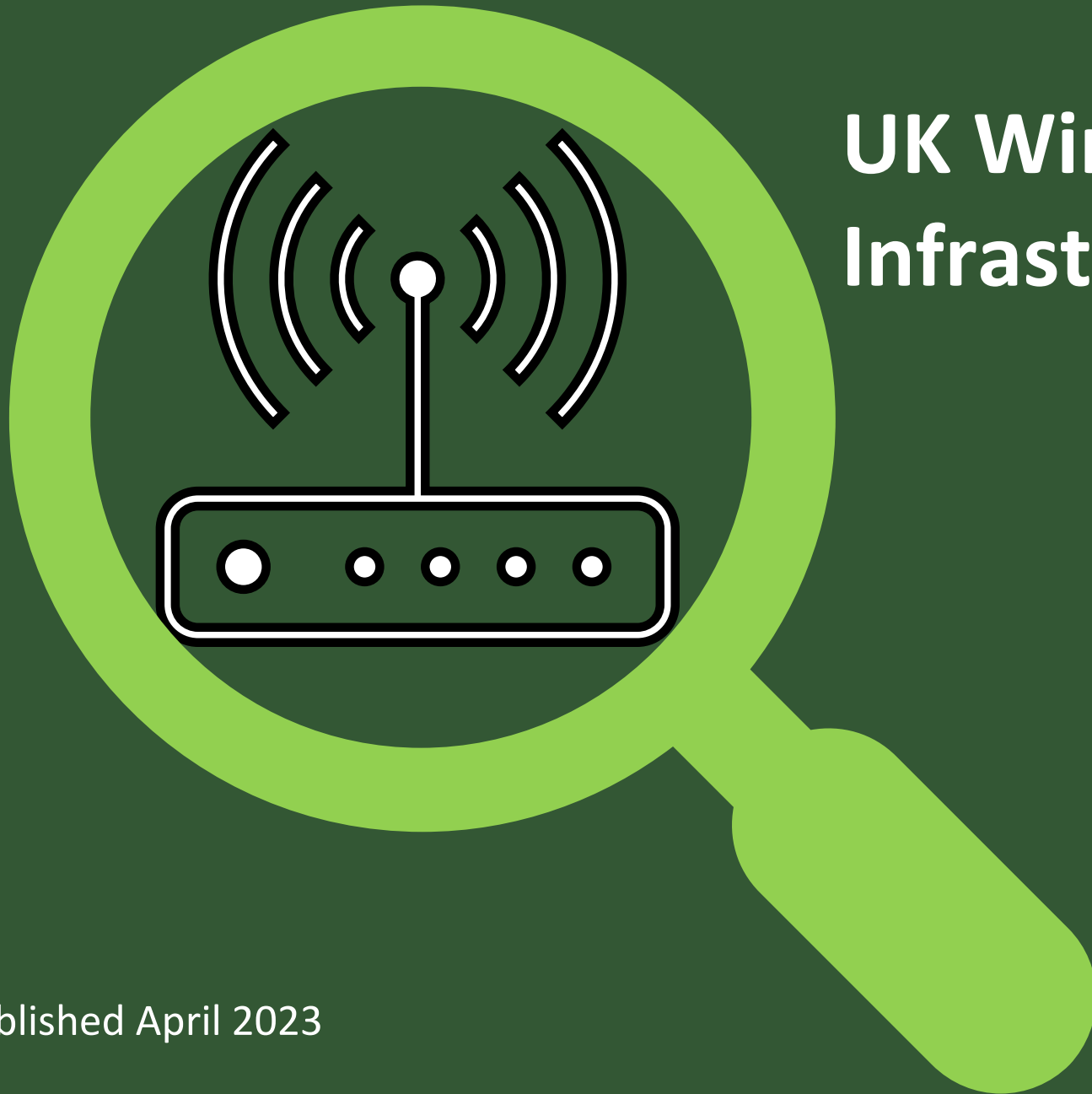
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RURAL SERVICES NETWORK

At a glance

The RSN continues to call on Government to create a cross-departmental strategy for rural England, setting out a vision and policy framework to deliver sustainable growth for its communities and businesses, and encompassing farming and environmental concerns. It should be led by a Minister at Cabinet level and supported by a fully funded action plan, with annual reports to monitor progress. This should be underpinned by developing indicators suited to measuring rural-specific needs.

Rural Services Network's thoughts on the **UK Wireless Infrastructure Strategy**

- The Wireless Infrastructure strategy includes a specific chapter on ensuring good connectivity across rural and urban areas with a 10 point plan for rural connectivity. However, the RSN has concerns about the vagueness of some of the points, for example in terms of very hard to reach areas the only commitment is that the government will **work with industry** to ensure that these premises get improved broadband where required - with nothing on time scales.
- The activities which the strategy suggests should be undertaken by local authorities and indeed the proposals in respect of 5G Innovation Regions fail to reflect the ongoing capacity issues faced by most rural councils. That will continue to be the case as long as the local government funding formula remains unfair on rural councils. In the 2023/24 local government funding settlement urban areas will receive £134.88 more per head of population in Government Funded Spending Power than their rural counterparts.
- The Government must ensure that the 5G Innovation Regions, particularly given their geographical size, fully consider the needs of the rural areas and businesses within the overall region. It will be far too easy for those Innovation Regions to focus all their investments in the more densely populated areas they cover where they can see more outcomes for the investment due to greater numbers being served. If that approach is taken, rural areas within the region will be pushed further behind the urban areas by comparison.
- The Strategy clearly demonstrates that there will be market failure in achieving the strategy's objectives in rural areas. Even where there is a marginal commercial case rural areas will be at the end of the queue for commercial investment. Only significant government investment can hope to combat the market failure referred to. There is insufficient government funding detailed in the strategy to combat the market failure in rural areas in anything like reasonable time.
- Addressing the sustainability of the electricity grid network in rural areas must be a priority.
- The Rural Connectivity Champion must be required to produce a publicly available annual report.
- Ofcom should be required to review and upgrade the broadband Universal Service Obligation which at 10 Mbps, is out of date and inadequate for what have become some everyday essential uses.

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PART 1: HEADLINE SUMMARY OF THE PROPOSALS & RSN COMMENTS

GENERAL

The Government, through the Department for Science, Innovation and Technology (DSIT) published a policy paper entitled UK Wireless Infrastructure Strategy on the 11 April 2023, see: https://www.gov.uk/government/publications/uk-wireless-infrastructure-strategy

Unfortunately, neither the pages nor paragraphs are numbered in the Strategy (but it runs to about 99 pages), making cross referencing difficult.

In this Rural Lens Review of the Strategy, we flag up some of the content for general information but include comments by the RSN where we consider it appropriate to do so.

The Executive Summary of the Strategy comments "the next decade will see seismic changes both in terms of what wireless connectivity can deliver and how we can use it. The economic and social benefits from these changes promise to be vast, from supercharging growth to accelerating our transition to net zero. But we can only realise these benefits with concerted action from government industry and others. This strategy sets out our plan to do just that."

Chapter 2 of the Strategy relates to "Ensuring good connectivity across rural and urban areas", but it is important to also reflect on what the rest of the Strategy is saying.

RSN COMMENTS

Rural areas are home to 9.3 million people (more than those living in Greater London) or 17% of England's population, with some 545,000 registered businesses based in predominantly rural areas.

This Strategy is of course limited to Wireless Infrastructure. Whilst that is hugely important it is just one of several issues which impact on the economic and social wellbeing of rural communities including structural inequalities, fragile infrastructure and economic weaknesses which characterise and hold back rural areas. **The RSN continues to call on Government to create a cross-departmental strategy for rural England, setting out a vision and policy framework to deliver sustainable growth for its communities and businesses, and encompassing farming and environmental concerns. It should be led by a Minister at Cabinet level and supported by a fully funded action plan, with annual reports to monitor progress. This should be underpinned by developing indicators suited to measuring rural-specific needs.**

The Wireless Infrastructure Strategy, quite properly, sets out the economic and social benefits from the changes set out. Of course, by doing it, in effect, describes how those areas which will not benefit from the changes – or which will be well behind the rest of the Country in doing so – will fall further and further behind. Most of those areas will be rural.

As technology improves the reality is that rural areas will be among the last to see the benefits – both economic and social – and therefore will continue to be left behind. This in turn translates into higher service delivery costs to providers serving those areas compared to those areas where the benefits materialise.

It is imperative that rural communities and businesses can share in the opportunities that will arise from gigabit-capable broadband, 5 & 6G mobile connectivity. If they do, not only rural areas but the wider national economy and society will benefit. If they do not, there will be both a lost opportunity cost and an inherent unfairness. There is a clear and substantial market failure demonstrated here which only direct investment by the Government can hope to address. Government must provide a much more detailed and timebound policy framework and address the market failure in rural areas.

In the March 2020 budget, the Chancellor reaffirmed the Government's commitment through the creation of the £5bn fund referred to in this Strategy. The Strategy however, neglects to mention that in the following Comprehensive Spending Review, only £1.2bn of the £5bn would be allocated up to 2024/25, leaving £3.8bn unspent.

The Government must allocate a significant proportion of the remaining £3.8bn for use during the 2022/25 spending period and to commit to a clear strategic and communications plan in implementing the outside-in approach.

The Government issued a call for evidence relating to "Improving Connectivity for Very Hard to Reach Premises" which ran between 15 March and 25 June 2021. In May 2022 the Government said, "Based on the evidence that was gathered during the call for evidence, the government will set out a series of policy proposals that will be forthcoming later this year setting out how it intends to address connectivity challenges to these premises". It is unclear if the April 2023 Strategy which is the subject of this Rural Lens Review is the promised policy proposals.

The Strategy describes the Progress so far as:
"In the last 5 years, UK government policies have driven impressive progress in the deployment of world class fixed and wireless networks across the whole of the UK, removing regulatory and practical barriers to deliver stronger growth, more jobs, and better public services in every corner of the country.

- through Project Gigabit, we are investing £5 billion in gigabit broadband networks, with an ambition to get gigabit broadband to at least 85% of premises by 2025 and over 99% by 2030.
- through our £1 billion deal with the mobile network operators, we are supporting rural communities by ensuring that 95% of the UK landmass have 4G coverage by 2025. This currently stands at 92%.
- we have made substantial progress with 5G, too. Last year, we met our ambition for the majority of the population to have access to a 5G signal by 2027, 5 years early through the deployment of basic, non-standalone 5G using existing 4G networks to deliver increased network capacity.

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- we have also taken steps to strengthen the security of our networks and diversify supply chains through the [Telecommunications (Security) Act 2021](#) and the [5G Supply Chain Diversification Strategy](#)"

> **RSN COMMENTS ON PROGRESS**
>
> There can be no doubt that over recent years there have been major increases in both Broadband and Mobile connectivity in very many rural areas. However, there are still huge swathes of Rural England which remain very poorly served.
>
> We would comment that the roll out of 4G in rural areas required a significant degree of match funding from rural local authorities to augment the government funding. That was a cost which local authorities serving urban areas did not have to face as their areas could be served commercially.

The strategy goes on to describe the potential of advanced wireless connectivity. It states that "the next decade will see the development and maturation of transformative technologies from AI and self-driving vehicles to digital twins which will drive demand for advanced wireless connectivity". It also states that there are "significant benefits for improving our public services, **supporting smart cities** which are cleaner and less congested and delivering connectivity to our schools and hospitals that will provide better more interactive lessons and personalised healthcare." It forecasts that "by transforming our economy widespread adoption of 5G can bring a cumulative productivity benefit of £159 billion by 2035 driving growth and inward investment and improving lives for **communities in every corner of the country**". It goes on to say that "by ensuring that everyone can access the technology they need, including through specific support for rural economies by enabling applications such as agri-tech we can make it as easy to start and scale up a digital business in rural Yorkshire as it is in central London."

> **RSN COMMENTS ON ADVANCED WIRELESS CONNECTIVITY**
>
> Note the specific reference to "supporting smart cities" as against the very general reference to "communities in every corner of the country" and the complete lack of reference to the "very hard to reach areas".

The Strategy sets out the Challenges involved, stating:

"However, there are challenges we need to address to ensure the UK can realise these benefits, as the economics of investing in wireless networks are changing:

- high costs of upgrading and maintaining networks are exacerbated by falling revenues and global inflation
- we still need to overcome uncertain demand for 5G-enabled services and continuing practical barriers to network deployment need to be overcome

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- many of the economic benefits we have identified require significantly higher quality connectivity than is likely to be deployed in national public networks - for example, smart factories, where remote repairs and self-driving vehicles can significantly improve productivity, may require a dedicated private network
- **5G roll-out in the near term is likely to focus on urban areas, where the commercial returns are more certain**
- **research we commissioned shows significant variation in the quality of mobile coverage in different parts of the country over the next decade** - economically important areas like Freeports and industrial parks could be underserved
- new and existing applications also require access to spectrum - but this is a finite and increasingly contested resource.
- Market dynamics are also changing."

The strategy sets out what it describes as a bold 2030 ambition **for the UK to have nationwide coverage of standalone 5G to all populated areas by 2030.** The Strategy says **"**our 2030 ambition requires significant commercial investment. We are therefore committed to creating an environment where commercial investment can thrive, increasing competition, driving down costs and improving demand for MNO (Mobile Network Operator) services.

In respect of supporting places to attract investment the Strategy sets out how the Government "will drive greater opportunities for industry and public service providers to be empowered customers for future connectivity solutions – supporting places to attract investment and encouraging adoption of 5G services.

The Strategy says "will do this by:

- encouraging commercial investment in wireless connectivity by supporting local authorities to identify and aggregate industrial and public sector demand for advanced wireless connectivity and build a clear business case for investing in it
- supporting secure new entrant providers, and scaling up existing provision, such as through neutral host operators and private network providers
- **driving local leadership and coordination, and encouraging local authorities across the UK to employ digital champions to provide strategic leadership for local authorities' own digital infrastructure strategies**
- **providing up to £40M for regions and local authorities across the UK to establish themselves as '5G Innovation Regions' to promote innovation and growth through investment in, and scaled adoption of, 5G and other advanced wireless technologies by business and public services". [These Regions will encompass a large area or Region (at least combined authority area in size or multiple local authorities working together]**

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On the issue of commercial investment, the Strategy comments that realising the benefits from 5G "relies on the UK's wireless network providers investing in high-quality public and private 5G networks. We recognise that the macro-economic environment, which is impacting access to capital on a global scale, as well as a number of UK-specific issues, mean some operators are facing challenges making returns for their shareholders. This will impact their decisions on 5G investment across the UK; **as with fixed broadband, there is a stronger commercial case for investment in areas with greater population density.** The full benefits of 5G can only be realised if high quality 5G is widely available, and this requires commercial investment. **Standalone 5G will provide the foundations for advanced 5G, which will enable the provision of new wide area, business-critical services in sectors such as transport and healthcare and services connecting businesses with operations in different parts of the country."**

The Strategy goes on to comment that "4G coverage will still have an important role to play in providing geographic (landmass) coverage beyond the 5G footprint, and will continue to co-exist with 5G over the course of the decade. In chapter 5 we set out how businesses, including those in more rural areas, can also benefit from advanced 5G."

As part of the "comprehensive suite of policies to drive up the adoption of 5G and advanced wireless technologies by the public sector and connected places" are the following measures:

- ensuring that digital connectivity requirements for future users of infrastructure are at the heart of major infrastructure projects
- supporting smart places, by highlighting the benefits of 5G and promoting investment in 5G-enabled services by local and regional authorities
- establishing a Digital Infrastructure Advisory Group made up of a selection of regional digital leaders to advise the government on how places can act to promote investment in and adoption of digital connectivity

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- supporting local authorities and regions across the UK with digital infrastructure and connectivity ambitions as part of any City Region and Local Growth Deal, Devolution Deal, Investment Zone, or Levelling Up funding activities

Referring to the future and the development of 6G the Strategy states "Through our 6G Strategy we will harness and develop the UK's strengths in telecoms and ensure that the UK can influence and benefit from the development of 6G in a way that meets the future connectivity needs of people, businesses and public services.

We will do this by:
- investing up to £100 million in future telecoms research and development, including through the Engineering and Physical Sciences Research Council's (EPSRC) Future Telecoms Research Hubs, putting the UK at the forefront of the diverse 6G research agenda
- developing a UK 6G vision and advocating for it at international fora
- forging international alliances to conduct joint research and expand our influence
- working with relevant standards bodies to shape our 6G future with the UK's key interests in mind
- considering whether the spectrum management framework remains appropriate to support future networks - setting out a roadmap for the UK for 6G."

The Strategy states that "The government is determined that the UK should take full advantage of these opportunities, but this will only be possible if places across the country can attract commercial investment in 5G and other forms of advanced wireless connectivity and for that to be adopted at scale by businesses and public services."

RSN COMMENT ON PRIVATE SECTOR INVESTMENT
The acknowledgement that the objectives of the strategy cannot be met without substantial investment by the private sector is an important point. As has always been the case it is across rural areas where there is little or no incentive for commercial investment (the strategy actually says that there is a stronger commercial case for investment in areas with greater population density).

The above clearly demonstrates that there will be market failure in achieving the strategy's objectives in rural areas. Even where there is a marginal commercial case rural areas will be at the end of the queue for commercial investment. Only significant government investment can hope to combat the market failure referred to. There is insufficient government funding detailed in the strategy to combat the market failure in rural areas in anything like reasonable time.

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PART 2: SPECIFIC AREAS FROM THE STRATEGY & RSN COMMENTS

ESTABLISHING LOCAL DIGITAL INFRASTRUCTURE STRATEGIES

The Strategy states that "At the local level, a focused strategy for encouraging and facilitating the deployment of digital networks can help to boost economic growth, digital inclusion and deliver a range of societal benefits, including the more effective provision of local public services. This could be as a part of a broader digital strategy or growth strategy, or a standalone strategy in its own right.

Local digital infrastructure strategies should:

- set out how the local authority will facilitate the rollout of digital infrastructure, including actions to increase cooperation with infrastructure providers and network operators
- promote long-term investment by highlighting the significance of digital connectivity to the area and the social and economic benefits it will deliver
- identify and aggregate public sector and local industry demand for connectivity services to make the case for investment in digital networks and services
- provide the contact information for key local authority departments.

Further guidance is available on the Digital Connectivity Portal on how local authorities can demonstrate leadership and create a strategy to encourage investment in digital infrastructure".

> **RSN COMMENT ON LOCAL DIGITAL INFRASTRUCTURE STRATEGIES**
>
> The Strategy suggests that local authorities should develop local digital infrastructure strategies and stresses the benefits that will bring, however it fails to recognise the ongoing capacity issues faced by most rural councils. That will continue to be the case as long as the local government funding formula remains unfair on rural councils. In the 2023/24 local government funding settlement urban areas will receive £134.88 more per head of population in Government Funded Spending Power than their rural counterparts.

Digital champions and coordinators

The Strategy states "Local authorities can appoint digital champions and digital coordinators to provide strategic leadership on the local authority's digital infrastructure strategy. This can have a hugely positive impact on the deployment of digital infrastructure and help build more effective

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relationships both within councils and with telecoms providers. Research from Mobile UK suggests that local authorities which have prioritised digital connectivity and appointed digital champions have had significant success in speeding up rollout and improving relationships with telecoms companies."

"A local authority may also consider appointing a Digital Infrastructure Coordinator who can support the digital champion and act as the main point of contact or 'account manager' for industry on issues related to digital infrastructure. They would also work closely with local authority teams involved in the deployment process and help promote and coordinate the use of public sector assets for hosting digital infrastructure".

SUPPORTING LOCAL AUTHORITIES TO INVEST IN DIGITAL CONNECTIVITY
The Strategy argues that "Creating a value chain around advanced wireless services can help boost investment and drive growth at a local level. Local and regional authorities can create a sustainable business model that allows for this value to be reinvested in public services for the benefit of local communities. Any public investment in advanced wireless services could be based around existing budgets or from wider local growth and levelling up funding opportunities. This could include additional local government funding opportunities such as the Levelling Up Fund, Town Deals or City Region and Growth Deals where funding has already been allocated for digital connectivity activities. The UK Shared Prosperity Fund can be used to support relevant digital interventions, at the discretion of the local authority."

> **RSN COMMENT ON DIGITAL CHAMPIONS AND COORDINATORS AND SUPPORTING LOCAL AUTHORITIES**
>
> The Strategy sets out the importance of Digital Champions to local authorities but again, fails to recognise the ongoing capacity issues faced by most rural councils. That will continue to be the case as long as the local government funding formula remains unfair on rural councils. In the 2023/24 local government funding settlement urban areas will receive £134.88 more per head of population in Government Funded Spending Power than their rural counterparts.

THE EVOLUTION OF 5G

The Strategy states "While 4G will continue to play an important role in providing widespread geographic connectivity to consumers through public cellular networks across the UK's landmass, 5G can offer significantly better performance and support a far greater range of use cases. 5G enables data transfer speeds of more than 10 times faster than 4G, has the potential to offer lower latency and greater reliability and the ability to connect more devices. The implications of these improvements reach far beyond the potential to develop the capabilities of smartphones, enabling an array of innovative use cases and providing for transformative economic, and social benefits that were perhaps unimaginable a decade ago.

The government's ambition for the **majority of the population to have access to a 5G signal by 2027** has been met early through the deployment of basic, or non-standalone, 5G which is built on a 4G core network. **While this has helped MNOs (Mobile Network Operators) increase the capacity of their networks in more densely populated areas,** it does not reflect the full functionality 5G can deliver.

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CONNECTED PLACES

The Strategy comments that "Wireless connectivity already forms part of many essential services within the public sector; for example, enabling people to book medical appointments remotely and order prescriptions through the NHS app. Standalone 5G could unlock new applications and enhance existing services, enabling new digital ecosystems that create wider benefits across the public sector. 5G can help create connected places, whether through enabling so many more connected devices and services to work reliably and securely, or providing efficiency and productivity benefits across key services for citizens and communities."

UPGRADING THE ANALOGUE PUBLIC SWITCHED TELECOMS NETWORK

The Strategy acknowledges that "Ensuring good mobile connectivity will be increasingly important as the telecoms sector upgrades the analogue Public Switched Telecoms Network (PSTN) to digital voice services (VoIP) by 2025, due to the reliance of VoIP services on battery power in the event of an electricity network failure. Where indoor mobile coverage is poor or unreliable, there are a number of broadband-based solutions to make calls on services such as WhatsApp and Wi-Fi calling, alongside use of femtocells. However, while all MNOs offer Wi-Fi calling to their customers, not all mobile phones are configured to support this feature. The changing nature of the UK's telecoms infrastructure and the move to digital means it is essential that we ensure that disruption is minimised and customers are protected, particularly those that are more vulnerable. The power resilience of mobile networks is becoming increasingly important for keeping people connected in the event of a power outage. In recognition of this, the Secretary of State has asked Ofcom to review how all communications providers are meeting the needs of their customers. The government continues to work closely with Ofcom to understand what may be considered appropriate and proportionate, while also working in partnership with the energy sector and its regulator - Ofgem - to better understand the co-dependencies and improve our joint approach to building resilience for the future."

RSN COMMENTS ON EVOLUTION, CONNECTED PLACES AND UPGRADING THE NETWORK

The RSN was pleased to have been involved in working with BT as part of the Digital Voice Advisory Group to ensure better understanding of the implications for rural communities of the move to digital voice services. More information is available at this link: https://newsroom.bt.com/were-expanding-our-trials-of-digital-voice-for-customers/   In the case of a powercut, it is generally recommended o use a mobile telephone to contact emergency services. The RSN has concerns over the implications for rural communities where there is limited or non existent mobile telephone coverage and has raised these points, along with concerns over the sustainability of the electricity grid network. BT is currently extending its Digital Voice trial but has currently exempted areas without mobile telephone reception and is working on solutions for these customers.

We remain extremely concerned about the sustainability of the electricity grid network in rural areas - especially during adverse weather conditions. Without electricity broadband will not function, and if that is in an area where there is poor or no mobile phone connectivity there could be significant hardship for the households and businesses during electricity supplies failures. **Addressing the sustainability of the electricity grid network in rural areas must be a priority.**

AFFORDABILITY

The Strategy recognises that a key barrier preventing adoption of new wireless networks by consumers and business is the cost of services. The Strategy states "While it is reasonable to assume that costs will fall as new wireless technologies become increasingly ubiquitous and 5G becomes the de facto standard, we consider it essential that as many people as possible should be able to benefit from the new services offered by these new networks.

To support affordability and internet access, we have worked with providers to enhance the number and promotion of affordable tariffs that are specifically designed to support low income families – this includes tariffs for mobile phone services. More is needed to ensure those who are entitled to social tariffs are aware of the help available…... We will continue to work with Ofcom to monitor the general affordability in the market and the take-up of social tariffs."

IMPROVING DIGITAL SKILLS

The Strategy states "This government has ambitious plans to boost the UK's digital capability and capitalise on the opportunities for growth this will create. We are working closely with industry and academia to drive forward a set of actions to grow the digital workforce, tackle the digital skills gap and support a diverse range of people into digital roles. These actions include founding the Digital Skills Council (June 2022); launching successful AI and Data Science Conversion Courses; and supporting the Home Office with visa routes for digital jobs…." In 2020, the government introduced a digital entitlement for adults with no or low digital skills to undertake specified digital qualifications in essential digital skills, up to level 1, free of charge."

> **RSN COMMENT ON AFFORDABILITY AND IMPROVING DIGITAL SKILLS**
>
> There is no mention in the strategy of the needs of rural people who have not been able (due to connectivity or affordability issues or otherwise) to use broadband. With more and more service access being delivered digitally there must be, as part of this strategy, a programme to support such people many of whom [but not all by any means] maybe elderly and reluctant or frightened to use new (to them) technology.

HEALTH AND SOCIAL CARE

The strategy comments that "The government's 2022 Plan for Digital Health and Social Care sets out plans to accelerate adoption of digital technology within the health and social care system, improving health outcomes for people and their families. This includes a commitment to ensure that all health and social care settings have the right infrastructure and connectivity to work digitally.

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Access to consistent, reliable wireless connectivity is vital for ambulance staff, community nurses, care workers, clinicians and people in health and care settings and is a crucial enabler of the ongoing work to digitalise health and care provision and improve public health. It can support a wide variety of services and functions, including:

- remote monitoring of patients through sensors and other connected devices
- video consultations – either between doctor and patient, or between health and care professionals, for example on patient visits or in ambulances
- transmitting high resolution images from scans
- ensuring equitable access to internet-connected devices and care records for people drawing on care and support services in rural locations
- high-spec connectivity within clinical environments, connecting people and machines
- drones for transporting medicines

Some of this connectivity will need to be provided over the national public mobile networks; this includes connectivity for patient wearable devices and connectivity for mobile health and care workers. Some of it, such as high-spec connectivity for hospitals and other indoor environments, may be better delivered over a bespoke private network.

Connectivity requirements should be aggregated across Integrated Care Systems (ICSs) throughout health and social care. The ICS Design Framework requires ICSs to agree a plan for embedding population health management capabilities and ensuring these are supported by the necessary data and digital infrastructure. More funding for digital services is being delegated to ICSs and the government has committed to building digital skills and leadership in the health and social care workforce. **DSIT will work with DHSC, NHS England, ICSs, and local authorities to ensure that health and social care providers can benefit from the latest and fastest connectivity".**

> **RSN COMMENT ON HEALTH AND SOCIAL CARE**
>
> The Strategy, quite properly, sets out the health and care benefits from the changes set out. As we said at the beginning of this Rural Lens Review, by doing so it, in effect, describes how those areas which will not benefit from the changes – or which will be well behind the rest of the Country – will fall further and further behind. Most of those areas will be rural.
>
> Integrated Care Systems (ICSs) serving rural areas where connectivity will be an issue for years to come must continue to make traditional services readily available. Government funding allocations to ICS's must fully reflect the service costs concerned.
>
> It must be remembered that across the rural areas t**hat are** poorly served digitally, there are also huge issues regarding the lack of public transport to access services.

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PART 3: CHAPTER 2 OF THE STRATEGY ENSURING GOOD CONNECTIVITY ACROSS RURAL AND URBAN AREAS & RSN COMMENTS

The Strategy states "government's priority to build a better, more secure, more prosperous future for the UK includes a clear commitment to grow the economy, and create better-paid jobs and opportunity right across the country. To do this, it is vital that people who live and work in all parts of the UK, **including in rural area**s, have access to good quality mobile and broadband coverage.

The Strategy goes on to detail some specifics:

PROJECT GIGABIT AND SHARED RURAL NETWORK
"According to Ofcom's Connected Nations annual report 2022, **92% of the UK landmass is covered by a good 4G signal from at least one MNO, while 70% of the country is covered by all 4 operators. Ofcom also reports that the UK has 99% 4G indoor premises coverage from at least one MNO, and 84% from all 4 operators.**

4G geographic mobile coverage will extend to 95% of the UK's landmass through the Shared Rural Network programme, the £1 billion deal with the MNOs announced in March 2020. The programme is on target to deliver by the end of 2025, and **further improvements in the more hard-to-reach areas will continue until the start of 2027.**

Whilst much of this strategy is focused on achieving the shift from basic 5G to higher quality, standalone 5G (see chapter 5), we also recognise that 4G will continue to have an important role to play in delivering mobile connectivity to people and businesses across the country. **We restate here our commitment to ensuring good quality mobile coverage where we live, work and travel across the UK and improving the quality of mobile coverage reporting data. We also want rural economies to benefit from the huge benefits connectivity offers. Our 10 point plan for rural connectivity sets out how we will achieve this, including that we will be appointing a Rural Connectivity Champion to report to DSIT and Defra Secretaries of State to remove local barriers for deployment and promote digitally based innovation in rural areas.**

The government's ambition for the majority of the population to have 5G by 2027 was met 5 years early and 5G coverage is now available from at least one operator to at least 77% of premises. Even as 5G is more widely deployed, 4G will continue to have an important role to play and is expected to co-exist, albeit to a diminishing extent, as networks are upgraded to 5G".

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THE GOVERNMENT'S 10-POINT PLAN FOR RURAL CONNECTIVITY

1. The £5 billion project Gigabit will deliver future proof broadband to rural areas with £1 billion already made available.
2. **In very hard to reach areas where it will be uneconomic to deliver Gigabit broadband, the government will work with industry to ensure that these premises get improved broadband, where required. This year we will:**
   - **launch an £8M fund to provide capital grants to further promote new satellite connectivity to the most remote 35,000 premises.**
   - **set out plans to encourage the provision of fixed wireless access to other hard to reach areas.**
3. We are already investing £1 billion in the shared rural network to deliver 4G coverage to 95% of the UK land mass, with the biggest coverage improvements in rural parts of Scotland, Northern Ireland, and Wales.
   - this will also deliver 4G coverage on a further 16,000 km of roads, with further indirect improvements overtime, including a boost to 'in car' coverage on around 45,000 km of roads.
   - and we will improve geographic coverage to 79% of Areas of Natural Beauty, benefiting millions of visitors every year.
4. We have asked **Ofcom to improve mobile coverage reporting, including in rural areas.**
5. We are establishing a new headline national ambition **for 5G in all populated areas by 2030, and this will include connectivity in areas classified as rural - backed by measures that improve economics of rural roll out**
6. We are establishing a £40 million 5G innovation fund to establish 5G innovation regions. Driving innovation to adoption of advanced wireless technologies across rural industries will be a key focus of 5G innovation regions - supporting 5G enabled innovation everywhere
7. We are funding a new 5G adoption campaign that will help support adoption and investment in key sectors, including Agri-tech.
8. We are working with Ofcom to improve access to spectrum for rural network providers, making it easier for networks to be deployed and for innovative use cases to be realised
9. We will appoint **a Rural Connectivity Champion to report to DSIT And Defra Secretaries of State to remove local barriers for deployment and promote digitally based innovation in rural areas**
10. We are continuing to remove barriers to deployment in rural areas, including changing planning regulations, making it quicker and easier to roll out digital infrastructure

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RSN COMMENT ON THE 10 POINT PLAN

Much of the above is quite vague. In terms of very hard to reach areas the only commitment is that the government will **work with industry** to ensure that these premises get improved broadband where required - with nothing on time scales.

The "new headline nationwide ambition for 5G" only relates to "all populated areas". Whilst it is stated that this will include connectivity in areas classified as rural-backed by measures that will help improve economics of rural roll out - no definition or criteria of a "populated area" is given.

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The Rural Connectivity Champion must be required to produce a publicly available annual report.

We repeat our call for Ofcom to be required to review and upgrade the broadband Universal Service Obligation which at 10 Mbps, is out of date and inadequate for what have become some everyday essential uses.

IMPROVING MEASUREMENT AND REPORTING OF MOBILE COVERAGE

An accurate picture of mobile coverage is becoming increasingly important as more and more critical services in sectors rely on coverage to function. Inadequate reporting of coverage is one of the barriers to improving connectivity in rural areas - improving coverage reporting highlights gaps in coverage and where networks need to be improved in all areas of the country.

Ofcom currently measures 5G availability based on the minimum signal strength required for devices to establish a reliable 5G connection and uses this to report on 5G availability with a 'high' or 'very high' degree of confidence. Predicted levels of 5G coverage can differ substantially between the 'high' and 'very high' confidence levels.

We have therefore asked Ofcom to continue to hold the MNOs to account through on-the-ground signal testing and to improve the accuracy of its coverage reporting through increased use of crowd-sourced data.

Furthermore, we have asked Ofcom to report on the extent of standalone 5G coverage as it starts to be deployed. This will help us track progress towards our 2030 ambition for standalone coverage **in all populated areas.**

Postcode districts in rural areas are larger than urban areas and the number of devices in rural areas providing the crowd-sourced data is likely to be lower than in urban areas. This means that it is challenging on this basis to achieve the same accuracy at the same level of granularity in rural areas. **We have therefore asked Ofcom to consider how it can improve the accuracy of reporting of network performance levels in rural areas.**

RSN COMMENT ON MEASUREMENT OF MOBILE COVERAGE

We welcome these measures as there is no doubt that the experience of users far too often does not match up to expectations and the reported coverage.

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SATELLITES, DRONES, AND FIXED WIRELESS ACCESS TECHNOLOGY FOR RURAL COVERAGE

Developments in both low earth orbit and geostationary orbit satellite technology mean that satellite technology is **likely to play an increasingly important role in delivering broadband and mobile connectivity to remote areas,** providing backhaul for cellular networks and establishing reliable narrowband links to IoT devices. We are starting to see commercial partnerships between satellite operators and mobile operators. It is now foreseeable that the integration of terrestrial and non-terrestrial networks will **eventually lead** to ubiquitous network coverage.

In recent years the satellite industry has seen significant reductions in production costs, and improvements in reliability and efficiency and, although we expect this to continue to improve, it should be noted that **the business models for these connectivity solutions have not yet been proven.**

DSIT is continuing to work closely with Ofcom to ensure that the UK's regulatory environment supports the deployment of satellite connectivity as the market matures. **Satellite is also an important element of our rural connectivity policy ambitions. High altitude platforms and drones could also potentially play a role in improving coverage. For example, Virgin Media O2 has trialed the use of 5G drones to help emergency services patrol national parks.**

Wireless connectivity can play a crucial role in delivering fixed broadband to the hardest to reach areas of the country. Fixed Wireless Access (FWA) employs 4G and 5G technology to bring enhanced broadband connectivity to homes and offices and is often used as an alternative to the last-mile of fixed connectivity where deploying fibre infrastructure affordably is challenging. **Similarly, satellite can offer connectivity in areas where both fixed and mobile networks are not available due to cost barriers, particularly in rural or remote areas**. In December 2022, we launched our first 'Alpha Trials' to test new, low-latency low earth orbit (LEO) satellite connectivity. **This technology, which has not yet been tested at scale in very hard to reach areas, could be one of the potential solutions to improving digital connectivity in these areas, complementing more readily upgradeable terrestrial wireless solutions.**

The Alpha Trials will enable the government to test the capability of, and the response to, this new evolving technology. In addition, **we will be able to better understand whether LEO satellites can offer a viable solution for those premises beyond the reach of gigabit-capable broadband, or other publicly funded schemes.**

As well as testing the technical capabilities of the technology, the trials will assess what benefits faster connectivity will bring to these remote premises. Recent tests have shown that in many locations LEO satellites can deliver speeds of up to 200 megabits per second - well above the speeds capable of being delivered via copper fixed line connections commonly used in these communities today.

The Alpha Trials will help us to better understand the full capabilities of low earth orbit satellite broadband as we move forward with our programme to connect the small number of very hard to reach homes and businesses across the UK that may be too difficult or expensive to connect via physical cables or terrestrial wireless solutions.

RURAL SERVICES NETWORK

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RSN COMMENT ON DRONES AND FIXED WIRELESS ACCESS

Again, much of this is quite vague with little certainty. The strategy states that the business models for these connectivity solutions have not yet been proven. In respect of the new low-latency low earth orbit (LEO) satellite connectivity the Strategy states that this technology has not yet been tested at scale in very hard to reach areas. Whilst that technology **could** be one of the potential solutions to improving digital connectivity in these areas there is no certainty at this time.

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