Rt Hon Lord Adonis
Chair, National Infrastructure Commission
1 Horse Guards Road
London
SW1A 2HQ

3 March 2017

Improving UK connectivity

Ofcom welcomes the National Infrastructure Commission's *Connected Future* report. Good connectivity is essential to the everyday activities of UK consumers and businesses, and there is clear room for improvement. Our annual Connected Nations reports have demonstrated this, showing the geographic spread of coverage and highlighting the areas where consumers are poorly served.

Ofcom has a number of important roles in enabling better connectivity: we set the regulatory framework to promote investment, which we set out to improve in our Strategic Review launched in 2015; we manage and release spectrum for 4G and future 5G services; and report on levels of connectivity and make information available to allow consumers to make better choices. We also work with Government to provide technical advice on how connectivity may be improved.

I thought it would be helpful to set out some of the work we are doing that relates to a number of your specific recommendations.

Providing consumers with better information on coverage

We agree that clear, accurate data on coverage is vital for consumers, and we have work underway on ensuring that everyone can access good quality information that reflects actual experience. Our coverage maps and coverage checker provide consumers with a simple and accurate view of the quality of coverage they can expect in any postcode area. They also encourage competition between mobile operators to provide better coverage.

We are keen to ensure that consumers can access consistent and reliable data that reflects their experiences. Ofcom collects mobile signal level data from all operators, which is subject to a validation and testing process and updated monthly. In particular, we have tested the quality of mobile services available in various locations around the UK at different signal levels, and have checked the accuracy of signal level data provided by the operators in different areas. We have used the results of our work to set rigorous signal thresholds for where we indicate voice calls can reliably be made, reflecting consumer experience. We use those thresholds and data to provide mobile coverage information to consumers on online maps and apps. Ofcom believes that MNOs should use the same signal thresholds that we consider are necessary for reliable coverage for their own maps and coverage checkers.

We continually refine the coverage information we provide to consumers through field testing, working with the mobile operators and analysing consumer feedback on the accuracy of the information we provide on our maps and apps. In September 2016, we

began crowd-sourcing mobile coverage data through an Android app. The app measures mobile coverage, voice and data performance and consumer use of mobile services, and the results are used to improve the accuracy of the coverage information we make available to consumers.

Beyond the provision of accurate information to consumers, as the NIC's report identifies the challenge is how to ensure that mobile coverage and quality can both increase, particularly in parts of the country where consumers' experience is poor. The UK's four mobile operators must each meet a licence obligation to provide 90% geographic coverage of the UK by the end of this year, and the Digital Economy Bill will give us the power to take enforcement action against any operator that failed to meet its coverage obligations from the end of 2017. Beyond these existing obligations we are looking closely at how we can help use our regulatory levers to widen coverage further, working with Government and the industry. In addition, we have committed to examine new coverage obligations when we award the 700 MHz spectrum band for mobile services.

Infrastructure sharing

We recognise the importance of promoting better access and reducing cost barriers to deploying mobile infrastructure. Measures to reform the Electronic Communications Code being taken forward by the Government in the Digital Economy Bill should assist providers by tackling high landlord rents in shared sites and give better access rights to third parties looking to provide mobile services. Ofcom will be required under the reforms to put in place a Code of Practice on how communications providers should deal with landowners, emphasising that such arrangements are encouraged and should not be subject to any unwarranted further consideration or compensation, and we will be seeking views on this shortly.

However, there may be further planning challenges around the deployment of micro-sites, which are critical infrastructure to support very high frequency "millimetric wave" 5G spectrum. Operators say they expect to face difficulties accessing these sites in the numbers and density necessary for successful 5G rollout. We will continue working closely with Government to promote infrastructure sharing wherever practical, and would be happy to work with the NIC on any future plans for improving shared access.

Access to spectrum

Making spectrum available is critical to enabling early 5G rollout and the development of services to benefit the UK. In February this year we published an update on our plans for making spectrum available for future 5G services in the UK.[1] This provides an overview of our programme of work on identifying spectrum bands for early 5G rollout. Ofcom has worked with international partners to focus efforts on the identification of three initial bands – 700 MHz, 3.4 to 3.8 GHz, and 26 GHz – that reflect the different requirements of potential 5G services.

New 5G technology will be used across a variety of sectors, as identified by the NIC. Many customers will continue to access services via traditional network operators, but we

---

[1] This document can be found at: http://bit.ly/2k6Gl4u

recognise that others– such as business parks, factories or dockyards – may require direct access to 5G spectrum. This means our decisions need to provide certainty for securing investment in national networks, while allowing flexible access to support new types of demand from industry and other groups.

To address this challenge we are looking at a range of ways to make future spectrum available. These include the award of dedicated nationwide licences, licence-exempt or licensed-shared use between different users, and geographic sharing. We will consider these different approaches as part of our consultation later this year for making the 26 GHz band available for 5G. We will also continue with work to enable sharing and the smarter use of spectrum.

Connectivity on transport networks

Mobile connectivity on the main transport networks does not meet consumer expectations. Coverage on motorways is generally higher than for other routes, with 97% of the UK's motorway network covered by voice services from all operators as at June 2016. Data coverage is lower, with only 83% of the motorway network covered by a data service from all operators.[2] On A and B routes the position in June was markedly worse with just 62% of the UK's network of A and B roads covered by a voice service from all operators, and data coverage at 45%. Ongoing 4G network rollout will drive these numbers up, but gaps on segments of major routes and on rural roads may persist.

Further investment in network infrastructure and systems will be necessary to remedy coverage gaps on roads. We are considering what regulatory options are available to help address this, and will look at whether targeted coverage obligations should be associated with future spectrum auctions. This year we will examine the design of possible coverage obligations for the 700 MHz spectrum award, which could include targeted coverage on roads.

Consumers travelling by rail also frequently experience poor coverage. This may be because these railway lines pass through rural areas, tunnels or cuttings, where mobile signals are weak or totally blocked. Existing on-board WiFi services also suffer from a high degree of variability in availability and performance and do not provide the level of continuous coverage that rail users need.

The Government has already set targets for better mobile connectivity on the rail network. We are supporting this work, providing technical advice to assist delivery of the various technical solutions available. These can be based on mobile spectrum and infrastructure, as is currently the case, or use other appropriate spectrum with dedicated trackside systems mounted on existing structures such as masts and station property. We see further scope for effective coordination between mobile operators and other parties to address coverage gaps and provide good, continuous connectivity on trains. To complement this, we are assessing options for additional spectrum access where this might be needed to support better rail connectivity.

---

[2] Data from Connected Nations Report, 2016

I hope that this overview is helpful. Ofcom is fully committed to working with Government and others to ensure we use all the levers at our disposal to meet the connectivity needs of the UK.

Sharon White

Cc: Rt Hon Matthew Hancock MP, Minister of State for Digital and Culture
         Rt Hon David Gauke MP, Chief Secretary to the Treasury