AWTG
Advanced Wireless Technology Group

Advanced Wireless Technology Group, LTD, Response to DCMS Consultation on "Statement of Strategic Priorities for Telecommunications, the Management of Radio Spectrum and Postal Services"

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About the Advanced Wireless Technology Group, LTD

Founded in 2006, the Advanced Wireless Technology Group, LTD (hereafter referred to as "AWTG LTD") is an end-to-end telecommunications services and technology solutions provider.

Our services cover the full network lifecycle from initial consultancy support through to network delivery, optimisation and maintenance. Our solutions portfolio includes Digital Transformation, Rapid Prototyping, Artificial Intelligence, IoT Management platform and 5G software products.

AWTG LTD is pleased to have worked on the successful delivery of DCMS funded projects such as the Worcestershire 5G testbed and Millbrook Autonomous Vehicle Test Bed in Milton Keynes. Our subject matter experts have assisted in the review and audit of many national-level infrastructure projects, such as the broadband rollout in Northern Ireland and the Emergency Services Network Replacement Programme.

Consultation Questions

AWTG LTD hereby provides detailed section-by-section responses to the consultation questions:

- Do you agree with the government's strategic priorities and desired policy outcomes for telecommunications, the management of radio spectrum and postal services?
- Does this document set out clearly the role of Ofcom in contributing to the Government's strategic priorities and desired outcomes?

We address topics that we see as closest to our business; other topics are not commented on.

Section 1: World-Class Digital Infrastructure

AWTG LTD agrees with the Government's ambition for gigabit-capable network access and the desire to place the UK at the forefront of future 5G mobile technology deployment.

5G is a paradigm shift in technology that enables a host of new applications and use cases with the potential to be truly transformative for UK-based businesses and citizens alike. Having a clear and ambitious target for comprehensive availability and access to this key technology enabler will help advance the UK's economy and reputation as a technologically advanced environment for investment. It will propel the UK at the forefront of smart technology development and use.

AWTG LTD approves of the principle of the Universal Service Obligation, and whilst we appreciate the rationale for the current specification of 10 Mbps, we would encourage a more ambitious target for future consideration. The 10 Mbps threshold can easily be delivered using copper-based technologies. We would encourage a future USO target that encourages the deployment of superfast fibre-based transmission, such as specification of greater than 30Mbps—comparable with current 'Next-Generation Access' requirements. Further, it is noted that such values are 'moving targets', and the situation will have improved with the emergence of 5G systems, among other developments, by the time the Universal Service Obligation comes into force.

1.5 Switchover Process

AWTG LTD agrees that the switchover process to fibre-based products and services should be as easy as possible to encourage take-up of the new services. Even when switchover processes are simple and executed with speed, consumers often still experience an inertia to switching if the benefits of the new product/service are perceived to be minimal and therefore not worth the effort. This is borne out by the observation in Ofcom's Connected Nations 2018 report that whilst 94% of UK homes and businesses are in areas where superfast or better broadband is available, only 45% of homes are subscribing to those services.

Products and services that provide a distinct and clear benefit should be actively promoted by the entire value chain—including government—to help consumers switch. But for those customers that do not engage and continue to stay with older products, there shouldn't be any financial penalty. This would not only protect vulnerable consumers, but also would incentivise service providers to help customers switch to newer products, as there would be no financial incentive to maintain customers on older technologies.

1.6 Mobile and 5G Connectivity

AWTG LTD supports the Government's commitment to extending geographic mobile coverage to 95% of the UK by 2022 and provide uninterrupted coverage on all major roads. Coverage of the road network will be important in facilitating autonomous vehicle connectivity—a key future 5G networks use case. AWTG LTD would nevertheless favour an even more ambitious commitment, and believes that such matters should remain under constant review as technologies/applications that would benefit from better coverage begin to perpetuate. It is noted here that reliability and availability are two of the key metrics that differentiate 5G from prior mobile communication systems and open up vast new market areas such as in manufacturing and Industry 4.0, among others such as the aforementioned vehicular networking.

We further advocate for specific targets for the railway network as this has been a category which has traditionally lagged behind in terms of mobile service reach. There are many practical considerations that underpin this lag, most notably the difficulty in getting radio signals from external macro sites beyond the perimeter of Network Rail land to penetrate easily into deep railway cuttings, tunnels and other locations where the tracks reside. However, there are solutions that could overcome these difficulties, which when combined with approaches such as neutral hosting might deliver the high-quality mobile user experience to rail passengers that is lacking today. Given the difficulty and level of technical challenge, it is appropriate to consider a national UK-wide approach such as a single neutral hosted network for railways. This would not only minimise

that vision. AWTG LTD is a leading SME within the 5G arena and is collaborating and working on several of the early 5G testbeds, including Worcestershire 5G and AutoAir in Millbrook. Excellent progress has been made, and we're pleased to have delivered a live 5G network utilising the 5G New Radio air interface. The testbeds have collectively helped to make huge strides in the technology readiness levels of 5G equipment, systems, end devices and applications, but there remains additional testing, development and insights needed to fully realise the benefits of 5G at scale.

AWTG LTD fully supports the government's continued investment in 5G through the Phase 2 Urban Connected Communities programme and related initiatives. Such investment will be crucial to maintaining the momentum that has been generated.

1.7 Spectrum Management

As one example arguing the virtues of innovative spectrum management techniques, a key component of 5G is its opening up and use of vast transmission bandwidths in "high-band" mm-wave spectrum—the principle initial target being 24.25-27.5 GHz in Europe. Transmissions at such frequencies can be very large, up to 400 MHz bandwidth in 5G New Radio not even considering the plethora of carrier aggregation options available. However, the propagation at such frequencies is generally very poor, perhaps a few hundred metres at most. It won't be economically viable to place a base station every km, or less, in rural areas to achieve such mm-wave high-bandwidth coverage, if there are only a small number of users/customers per each such base station. The same might be said of providing multi-gigabit backhaul to each such base station. It is therefore vital for more lower-frequency "low-band" and "mid-band" spectrum to be opened up to realise the full benefits and plethora of high-capacity 5G applications in rural scenarios. Spectrum sharing is the recognised solution to achieving this opening up of additional spectrum—and novel spectrum management mechanisms, such as enabling "dynamic spectrum access" and innovative licensing schemes, are key to that spectrum sharing.

A robust and forward-looking approach to spectrum management will also be key to unlocking the abilities of alternative service providers to innovate and develop new commercial models based on the potentials of 5G-enabled services. While noting the immense values and contributions of the traditional mobile network operators, there might still be benefits of new players entering the market. Specifically, there are niche areas where the market is unable to deliver the required mobile services, presenting clear opportunities for alternative service providers if they were able to access spectrum. Industry 4.0 is a key 5G theme, but this is predicated on having excellent in-building coverage within these locations as well as excellent backhaul links. As the Worcestershire testbed has already identified, the delivery of 5G coverage and capacity into a live manufacturing environment with a high number of interfering sources is extremely challenging and requires careful planning and execution. This is a time-consuming activity, and it is sometimes beyond the interests of traditional mobile network operators to engage if the client is not a large corporate or "VIP"-category user.

Although innovative and more-holistic approached to spectrum management are therefore welcome, they must nevertheless balance on one hand the needs of traditional mobile network operators to make a fair return on their spectrum investment, with on the other hand the abilities of