The Scotland 5G Centre

Supporting the UK's wireless future:

Response to Ofcom's spectrum management strategy for the 2020s

26th February 2021

Version 1.0

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1 Executive Summary

The Scotland 5G Centre welcomes Ofcom's consultation on spectrum management strategy. We support the steps to support innovation and specifically the move to a more agile and automated approach to spectrum access that is aligned to the adoption and take-up of 5G services, new use cases and business models.

- Removing the barriers to access Shared Access Licence ("SAL") is important to S5GC. Making it as easy as an order on Amazon
- A roadmap to automate access, tools and systems is required. Current process will not scale to meet demand.
- Support of 700MHz and 3.6-3.8GHz bands into the LAL scheme.
- Ensure that's the spectrum management strategy evolves to support the unique challenges of Scotland. Considering local and national requirements in relation to new suppliers, and deployment models.

2 Scotland 5G Centre

The Scottish Government aspires for Scotland to be at the forefront of the 5G revolution and to ultimately establish the whole country as a leading 5G digital nation. 5G is the next generation of mobile communications, which promises faster speeds, increased capacity and improved reliability. Although the applications and possibilities of 5G can be challenging to understand, 5G will play an important part in future infrastructure that underpins the entire global digital economy, with potentially huge social, economic and environmental benefits.

The emergence of 5G as a business tool has the potential to accelerate growth through new efficiencies and higher productivity. By bringing together entrepreneurs, small businesses, research organisations, corporate and government bodies the Centre will foster innovation and collaboration across the business, technology, and telecommunications industries and beyond.

The Scotland's Digital Potential with Enhanced 4G and 5G Capability (Deloitte 2019)[1] report highlights areas of Scotland's economy and society which will be significantly enriched through the adoption of 5G technology. The report states the potential to generate an additional £17Bn and 160,000 jobs within Scotland GDP in the period until 2035.

- Established in October 2019
- The Scotland 5G Centre was set up as a national resource to stimulate economic impact and capture the social benefit of this emerging technology across our economy and communities
- 5G will play a pivotal role in the development and delivery of solutions essential, both, in the recovery from the COVID pandemic and in the ongoing development of the national economy
- The Scotland 5G Centre is here to accelerate the adoption of 5G, realising its economic and societal potential for Scotland and enabling all types of businesses to reap the benefits of this new technology

[1] https://www.scottishfuturestrust.org.uk/storage/uploads/deloittesfteconomicimpact4g5gfinalreportforpublication.pdf

3 5G for Scotland

It is estimated[2] that by enhancing 5G capability, Scotland has the potential to add £17 billion to GDP by 2035, create 160,000 new jobs and increase productivity by £1,600 per worker. 5G could play a part in creating 3,100 new businesses and a £3.3 billion growth in export volumes.

Significantly, 5G also has the potential to help sustain remote and rural areas, allowing all of Scotland's citizens and communities to embrace the technology and reap its benefits. SCDI highlighted that 20% of Scotland's population live in rural Scotland but it makes up 27% of Scotland's overall economy[3].

By 2030, the size of the UK economy could be boosted by between 0.88% and 1.54% (with a 'central' scenario estimate of 1.09%) compared to a situation where no national 5G network is developed.[4] Furthermore, Vodafone stated cumulative benefits to economic output in Scotland to 2030 stand at £9.3 billion, and 5 years to 2025, £2.9 billion. These are not just national-level benefits, they are benefits that will be felt by businesses, employees and families right across Scotland.

More now than ever, 5G is a critical enabler to Scotland's economic recovery following the COVID-19 pandemic. In fact, these estimates of the economic boost brought to the economy as a result of 5G infrastructure may even be understated.

Achieving widespread equitable 5G deployment will involve the coordination of industry, public sector and regulatory - and a clear understanding by all parties of how policy can drive change. The rollout of 5G networks is currently in its infancy and the public sector needs to engage with the private sector to not only deploy 5G infrastructure but deliver transformative benefit using the technology.

Wide-scale 5G deployment will help deliver social, economic and environmental benefits for all of Scotland, not least as part of our economic and social recovery - enabling innovation and the creation of highly skilled jobs; opening up remote working, social and leisure opportunities; delivering digital health and other new public services; and reducing travel, including the need to commute.

[2] *Scotland's digital potential with enhanced 4G and 5G capability* – Deloitte, Aug-2019
[3] https://www.scdi.org.uk/wp-content/uploads/SCDI-RC-Report_final_small.pdf
[4]https://www.barclayscorporate.com/content/dam/barclayscorporate-com/documents/insights/innovation/5g-a-transformative-technology.pdf

4 Consultation Answers

4.1 Question 1

Do you have comments on the overall approach to the review?

A] We have no specific comments on the overall approach to the review.

4.2 Question 2

Have we captured the major trends that are likely to impact spectrum management over the next ten years?

A] S5GC believe Ofcom have managed to capture the key trends. Most notably that spectrum management tools provide fundamental mechanisms for achieving spectrum objectives. This is particularly relevant when we consider the local and national needs of Scotland; the rural challenge and digital divide that exists today, with the potential of being exasperated with the introduction of 5G in our towns and cities.

Ofcom need to ensure that no barriers are presented in communities accessing and adopting the services outlined in 3.3.1 as a result of spectrum management and spectrum availability, regardless of the band.

4.3 Question 3

Could any of the future technologies we have identified in Annex 6, or any others, have disruptive implications for how spectrum is managed in the future? When might those implications emerge?

A] Considering national and local requirements, there is a need to industrialise and expand the processes around spectrum management. We strongly believe that automated spectrum management tools and process and a positive first step in evolving this.

A centralised approach to automating spectrum access through database should be encouraged and will result in accelerated adoption of 5G services. There is a requirement to 'automate sharing' in the short term as a priority.

Favourable regulatory environments of Norway and Switzerland have resulted in widespread deployment and adoption of 5G services, some of the highest in Europe. This was because more spectrum has been made available quickly and operators have launched 5G services across different spectrum bands. Norway has auctioned high-band spectrum at a far greater rate than other European countries.

An automated approach should encourage new deployment and business models such as shared mobile access networks and neutral host.

4.4 Question 4

Do you agree that there is likely to be greater demand for local access to spectrum in the future? Do you agree with our proposal to consider further options for localised spectrum access when authorising new access to spectrum?

A] S5GC consider there is already a demand (in Scotland) for local access spectrum, that will only increase through the adoption of 5G and raising awareness that spectrum is no longer the reserved right of the MNO's.

The uptake of private networks in Germany is testament to this. Whilst these networks are utilising dedicated spectrum, allocated by the regulator, this is demonstration of the increasing demand and uptake when the market conditions and tools are established.

Whilst the introduction of Shared Access Licences and Local Access Licenses form the foundation to enable more autonomy and support innovation. Today, the mechanism is more suited to support the growing demand for deployment of Private Mobile Networks. We strongly encourage Ofcom to consider further localised licensing options, particularly around the area of Automated Spectrum Sharing.

In addition, further consideration is required to respond specifically to the needs of rural Scotland. Today, less than 50% of the landmass is served by the four MNO's. Programmes such as S4GI and SRN will contribute significantly to deployment and close that gap and in time, it would be hoped these sites will be upgraded to 5G. However, there will still be a significant area of Scotland that will be unserved.

We welcome consideration of licences to support different geographies. Whilst local licences are well suited to spot solutions, further consideration at a national level is required to support a coordinated response to address rural Scotland, specifically. Access to licences to support wide geographic coverage is encouraged however, consideration also needs to be applied to how higher frequency licences could also be utilised on a small geographic footprint. As highlighted, spectrum use cases vary significantly across the UK, between urban and rural areas and there should be no barriers to adoption.

Further, as Ofcom remove barriers to spectrum access, new innovative business and deployment models will emerge. We welcome Ofcom's consideration of this specifically in relation to unique challenges in Scotland. Automation processes and tools must be scalable to consider any potential national solution.

4.5 Question 5

Do you agree with the actual and perceived barriers identified for innovation in new wireless technologies, and our proposed ways of tackling those?

A] We support that there is need for greater coordination to support future innovation in the growing range of connected devices used by consumers, businesses and public sector.

4.6 Question 6

Do you agree with Ofcom's proposals to improve our outreach and reporting activities, and spectrum information tools? a) Are there additional ways that Ofcom could better engage with existing and future users and providers of wireless communications? b) Please explain any specific areas where you believe more or better provision of information could provide value to stakeholders

A] The Scotland 5G Centre is the national centre for 5G. We are a central resource for Scotland for all things 5G. Accelerating the deployment and adoption of 5G and its services, as well as raising the awareness of 5G. In that, we encourage Ofcom to do more to provide easy step-by-step guides and information tools, tailored towards any business owner. The ambition should be that a business owner could order a local license solution, like any 'Amazon' product. There should be no needs for spectrum or industry expertise. In making this transition, will encourage and support innovation and emerging business models for smaller providers and SME's using localised licenses.

Regarding access to Local Licences, currently owned by MNO's. Further transparency needs to be given to where these licences are being utilised. For example, Band 7 is extremely under-utilised in rural Scotland. Recognising, there are commercial sensitivities around this we encourage Ofcom to explore a means of making this data available in a transparent way. With the objective of supporting greater adoption and innovation.

4.7 Question 7

Do you agree that it is important to make more spectrum available for innovation before its long-term use is certain? Do you have any comments about our proposed approach to doing this?

A] A core principle of the Scotland 5G Centre is to support and encourage innovation. We support Ofcom's aim to make spectrum available for innovation before its long-term use is certain. Having early and agile access to spectrum with the support of appropriate tools and automated processes would be welcomed.

4.8 Question 8

Do you agree that it is important to encourage spectrum users to be 'good neighbours' to ensure more efficient use of the spectrum? Do you agree with our proposals to: a) increase realism in coexistence analysis at a national and international level? b) encourage spectrum users to be more resilient to interference? c) ensure an efficient balance between the level of interference protection given to one service and the flexibility for others to transmit? Do you have any comments on which of these will be the most important?

A] We agree with Ofcom's proposals to ensure more efficient spectrum use. It is our view that more realistic coexistence analysis is the most important.

4.9 Question 9

Are there any other issues or potential future challenges that should be considered as part of this strategy?

A] Further to the growing demand and requirement for local and shared spectrum. There is significant innovation in the Space and Satellite sector. Recognising, that hybrid 5G/ Satellite networks are fast becoming a reality that will be capable of providing service; to not only end users but to MNO's on a wholesale basis. A automated and co-ordinated approach to spectrum access to support wide-scale deployment in ultra-rural location will be required.

4.10 Question 10

A] Please see responses in Questions 3 & 4

4.11 Question 11

Is there anything else we should be considering doing, or doing differently, to promote our objectives?

A] Digital connectivity is vital to all, as highlighted through the recent pandemic. However, the reliance and dependency is amplified in rural locations. Digital connectivity is vital for the future of rural communities and the growth of the Rural Economy. Improving digital connectivity will bring a range of benefits to rural communities, including: better access to online public services, enable businesses to thrive and support improved social interaction with family and friends.

Traditionally, the MNO business model is based upon population density. However, 5G as a service is potentially more suited to the enterprise market or B2B. We therefore need to consider that the new 5G business model for rural locations will be driven by new providers that consider a more diverse business model made up of many users, services and

applications. Recognising, the wider benefit that can be achieved to the public purse when digital connectivity is made available and appropriate for todays modern connected world.

- We strongly support Ofcom's aim 'to support the growing diversity of wireless services and providers'. Appropriate and efficient access to local and shared licences will be the lifeblood to enable new business models for new and smaller operators.

  These new business models are a result of market failure by the incumbent MNO's and its unrealistic to believe 5G will be deployed in locations where 3G/4G is currently not cost effective. As a result, Ofcom need to do more to encourage alternative models and deployment of neutral host services, addressing widescale market failure (in rural Scotland). Reducing the cost for of deployment and assessing the value and contribution to public services.

- Local Access Licences currently have a default duration of 3 years. Given that this duration can be extended by agreement with the relevant MNO licensee, it is our view that Ofcom has found an appropriate balance between the needs of the LAL user and those of the MNO licensee.

- We recommend that more transparency is required around accessing Local Access Licences. Ensuring that any prevention of access is legitimate.

- We recommend that Ofcom brings the 700MHz and 3.6-3.8GHz bands into the LAL scheme as soon as is practicable. The 700MHz band may be particularly useful for 4G 'anchors' for 5G Non-Standalone networks.