Consultation response form

Please complete this form in full and return to mobilestrategy@ofcom.org.uk.

Consultation title	Ofcom's Future Approach to Mobile Markets (8th April 2022)
Full name	[✂]
Contact phone number	[✂]
Representing (delete as appropriate)	Ofcom Advisory Committee for Scotland
Organisation name	Ofcom Advisory Committee for Scotland
Email address	[✂]

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Your response

Question	Your response
Ofcom Advisory Committee for Scotland	*'The Advisory Committee for Scotland advises Ofcom about the interests and opinions, in relation to communications matters, of persons living in Scotland.'*[1] The response from the ACS to this consultation draws on the knowledge and expertise of ACS members and is informed by our individual

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[1] http://www.ofcom.org.uk/about/how-ofcom-is-run/committees/scotland/

	experience and through discussion at our meetings. It does not represent the views of Ofcom or its staff.
	We have categorised our response into two sections. First, we cover specific comments on points in the consultation document, under "General Comments". Then we provide our perspectives on the questions raised in Ofcom's response document. We have highlighted areas of specific relevance to Scotland wherever possible.
General comments	Page 5: "The mobile sector has delivered good outcomes to date". We agree this is generally true for heavily populated areas of the UK. For rural areas, while it is improving, generally our view is "no, the mobile sector has fallen on delivery of good outcomes". Significant challenges – coverage, quality of experience, and resilience - still remain for rural areas. In some parts of the country, business customers would question whether the UK's mobile network is reliable enough to run credit card transaction machines on 365 days of each year. (Source: Glencoe Mountain)
	P6, also P35: Comment: Security is more than just restricting use of High Risk Vendors (HRVs). Should Ofcom be more active in setting expectations of the types of security best practices that CSPs should be applying to today's networks, especially on the subscriber side (versus internal IT networks).
	P7: Should Ofcom be considering regulations in place on how CSPs use cloud platforms (Amazon et al), to ensure UK data sovereignty and security? e.g. to ensure that all parts of service delivery and associated data (including customer data) are located within the UK – we can't rule out under-sea fibre cables being cut by a foreign power, for example. Hence should Northern Ireland have an "independent" network? An alarming statistic from 2019[2] is that – in that year – 92% of the West's data was stored in the US. Should Ofcom be pushing plans for

[2] https://www.atlanticcouncil.org/blogs/new-atlanticist/waving-the-flag-of-digital-sovereignty/

	"enhanced (digital) data sovereignty" cloud as also seen in France[3], Germany[4] and Italy[5]
	P8, 1.19: I can't see any reason why a 5G SA mobile core could deliver "potentially improved coverage". We presume improved (say) geographical or population coverages is meant here? Can you explain? We would suggest potentially deleting this statement unless you can cite a good justification as to why this could be the case.
	P25, 4.31/4.32: One challenge with out-of-contract conditions on mobile tariffs, is that - e.g. BT uses renewal of a mobile contract a trigger for renewing any associated broadband contract – tying consumers further into lengthy, seemingly ever extending, broadband contracts
	Figure 4.6 …. While this chart shows a good trend for the UK (as a whole), a Scotland-only chart would not look so positive (average ~60 4G geographical coverage by operator – see Fig 23, p43, Connected Nations report).
	P67: 6.45: "it can be difficult for customers to judge which is the best network to be on from a quality perspective." It is difficult for customers to judge because of the way the operators measure coverage. Examining any CSP website, the actual consumer service experience is determined by your postcode and in rural areas, one postcode can cover a large number of houses over a large and very variable geographic area. Therefore, it might appear that a given's consumer's postcode is covered whereas in reality, it is not. For example, there are nearly 50 houses in Blackwaterfoot (on the Isle of Arran, on the West Coast of Scotland) with the same postcode, some miles away and around the glen from each other. It is also very difficult to work out whether a consumer's mobile phone, tied to a particular CSP service, will work in other parts of the country so for those moving

[3] https://www.capgemini.com/news/capgemini-and-orange-announce-plan-to-create-bleu-a-company-to-provide-a-cloud-de-confiance-in-france/

[4] https://www.telekom.com/en/media/media-information/archive/sovereign-cloud-from-t-systems-and-google-cloud-635314

[5] https://www.gruppotim.it/en/press-archive/corporate/2020/CS_Noovle.html

	about, for work or pleasure, it is somewhat a lottery, in particular in rural areas. The ACS recommends that Ofcom give consideration on a more robust and updated way of demonstrating coverage (e.g. via use of "what3words")
Do you agree that the key potential market developments over the next five to ten years are those set out in Section 5? Are there any other key developments we should consider?	P39: Footnote 152: "This includes 528,000 out of 651,000 premises (81%) that do not have access to a decent broadband service from a fixed network." This is quite an astounding statistic … how many of these 528,000 premises are aware of FWA as an option. ACS work responding to the DCMS "Very Hard to Reach" Consultation in 2021 indicated (albeit in a small sample size) that most small businesses surveyed in the preparation of this report were not aware of the availability of FWA options. Ofcom and the MNOs should take action to raise awareness of FWA as a viable option. One area not covered, and perhaps not within scope for this report to be fair, is the opportunity (and arguably need) for MNOs to take lead soles in ecosystem projects leading to the delivery of new 4G and 5G enterprise (as opposed to consumer) services (see 5G RuralFirst[6] for example, where the need for consortia to be developed to allow the UK to exploit the Agri-Tech opportunity). Ofcom should ensure that regulation does not hinder development of such multi-company/organization ecosystems. Regarding "greater use of cloud" … with primarily US-based corporations - (p41, 5.17) … need measures to ensure resiliency and data sovereignty – should this (especially given the current world security crisis) be framed in regulation? Are there any implications for more poorly connected rural areas in more broad use of cloud services? (which, by their very nature, require good connectivity to the cloud service provider). Could for example cloud outages in hyper-scalers – which are not unknown – have a disproportionate on more poorly connected

[6] See https://www.5gruralfirst.org/report-new-thinking-applied-to-rural-connectivity/

area of the UK, for example in the rural areas of Scotland?

P44, 5.27: Use of Neutral Hosting Models – could be more radical, with local ISPs taking up the option with shared spectrum (ref 5G NT) in order to provide local 4G or 5G coverage in poorly covered areas. Do we need regulations to ensure that such ventures can "connect" at an appropriate point with the main MNO network? In other words, could networks of the future be built from "Network of Networks"? – including for example a public MNO network and a geographically large private 5G network? And should the regulatory environment support simpler interconnection of, and roaming between, such networks?

We note that these types of network models are also discussed in 5.46 late in the document.

P45: "cost-efficient network" … it is debatable today in the industry whether virtualization is actually delivering such benefit. We suggest that Ofcom reach out to STL Partners, a market research firm, to discuss the RoI of virtualization and the STL research in this area.

P47, 5.39: Open RAN is seeing (witness some of the CSP RFPs) some CSPs essentially specify a solution development process to pull together their Open RAN solution. This is a new area for some CSPs (previously they purchased entire pre-built products from vendors) and it is possible that requirements will not be specified correctly, or covered in sufficient detail. For example, some RFPs are not including many requirements for security for example, suggesting that either the CSPs are sufficiently versed to carry this out in-house OR that they may be leaving security gaps in their solution development process. We suggest it would be wise to include reference to these kinds of risks.

P48, 5.40: There is a risk that the integration requirements and costs of Open RAN will impact MNO profitability and potentially delay new network rollouts as the execution time for

	Open RAN integration projects takes longer than anticipated. We see that security is mentioned in 5.40 (ref to comment above on 5.39) P49, 5.50: There is a alternative model not covered here. Ambitious MNOs could form (perhaps exclusive?) relationships with the operators/owners of private networks and offer to the enterprise additional services and/or interconnect to the MNO national 5G network. Such an approach could give the MNO wider geographical coverage, say in the case where the private network is built in an area of poor general mobile connectivity, as well as providing additional services to the enterprise. P53, 5.61: "Apple and Google may be able to use their operating systems as platforms on which customers can choose their mobile provider" …… this is concerning and could give Apple and Google a dominant and unfair competitive advantage. The UK needs a strong set of MNOs …. Do we want to put this at risk by allowing non-UK web-scalers to retain an unfair advantage over what is now critical national infrastructure?
Do you agree that competition among MNOs is likely to continue to play a key role in the delivery of good outcomes, as outlined in Section 6?	P58: 6.9: The enterprise use cases for 5G are one of the areas where MNOs can develop higher profitability 5G services. When "some MNOs have said that the commercial incentives for investing in 5G networks are weaker" … is that because they are not sufficiently investing in enterprise use cases and 5G use case ecosystem development? P58: 6.10: "They [MNOs] say there is uncertainty over: …. their ability to monetise investments as a result of new players in the value chain capturing the direct relationship with customers". As mentioned about (5G RuralFirst), this of course be overcome by ambitious MNOs taking the lead role in forming ecosystems to develop key 5G use cases. P58: 6.11: "… these challenges could mean that …. the deployment of 5G SA may not extend to the whole of the UK." This is a concern – if, as

often happens, Scotland is "left behind" in the roll out of new technologies. We really need to see the MNOs engage with major industries in Scotland – including but not limited to Oil & Gas, Salmon Farming, Renewable Energy and Whisky production – not to mention public sector/government – to ensure that their needs are considered in the MNO strategic planning process.

P63: 6:30 "For example, if hyper-scalers develop a strong position in the provision of cloud infrastructure to mobile providers, competition problems may arise as a result" … not sure how you jump to this conclusion? Do you mean that operators will become "more alike" and have less opportunity to differentiate?

P64 6.33: Agree important to engage with CMA on web-scalers – esp for provision of cloud infrastructure

P64: 6.34: I think it's long overdue to re-visit the "2 Mb/s" as "good" broadband.

Do you consider that there are likely to be significant wider external benefits (externalities) from a quicker or more widespread rollout of high-quality networks than that which the market is likely to deliver, as discussed in Section 6? If so, please provide clear examples to help explain your answer.	Yes, without question. The manner in which our telecom networks underpinned the UK's response to the challenges of the Covid Pandemic is one example in recent times. It's a pretty safe bet to suggest that the UK's economy would have suffered even more if the networks (to be fair, mainly but not exclusively the fixed network) were in a much less developed state at the beginning of the pandemic.

Education, Smart Cities, and Support for Key Industry sectors are a few examples of where more widespread network roll-out could help support wider societal goals.

In Scotland, industry sectors like Salmon Farming (the UK's #2 food export over past years) would have benefited from wider mobile network rollout. In Norway for example, the MNOs invested in coverage across the fiords, something which did not happen in Scotland, leading to a competitive disadvantage for this important regional industry: the salmon farming companies as a result have struggled to adopt advanced AI/video analysis of fish |

feeding which could have both saved costs and reduced the environmental impact of fish farms.

Another growth sector that suffers from poor connectivity is the renewable energy sector, where control of wind turbines is made more difficult by lack of good mobile network coverage and lack of access to fibre. That said, these are perhaps good opportunities for private 4G/5G networks, which could in turn remove that earning opportunity from the MNOs.

Agri-tech[7] is another sector that would benefit from wider rollout of high speed, low latency networks. Potential business models[8] were investigated during the 5G RuralFirst project. With the Ukraine war currently threatening world grain supplies, the need for increased yields from farming will only increase. It may serve the UK and other countries well to pay more attention to the connectivity needs of the agriculture industry.

The question, when placed in the context of the economic growth, in particular from a Scottish perspective, is more whether the MNOs will engage the key industry sectors to understand their needs and opportunities, coupled with whether the industry sectors would adopt MNO offerings more tailored to their business needs.

ACS recommends that Ofcom facilitate workshops bringing these industry segments together with the MNO enterprise teams, to facilitate discussions for mutual benefit.

Additionally, attention should be paid to the coverage from mobile networks in poorer neighbourhoods. With mobile likely the only internet connection that people living there have, it is important that society does not leave such neighbourhoods further behind – which brings the need to institute social tariffs for mobile networks, and not just for landline-based fixed broadband.

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[7] https://www.5gruralfirst.org/the-trials-of-cups/ ; https://www.5gruralfirst.org/exploring-our-shropshire-use-cases/
[8] https://www.5gruralfirst.org/wp-content/uploads/2019/10/5G-RuralFirst-New-Thinking-Applied-to-Rural-Connectivity-1.pdf

	One area not discussed in the document is how the Mobile Industry in the UK is responding to climate change. The production chains, the data centres, and the network footprints are all increasing as consumer usage increases, increasing the carbon footprint linked to communications technology. Various enterprises - e.g. Apple - have committed to being carbon neutral by 2030. Should Ofcom, therefore, take a role, in driving industry targets in the climate change area?
Do you agree with our views on how competition across the value chain may evolve over the next ten years, and the potential implications for the delivery of good outcomes, as outlined in Section 6?	In part, yes, however the ACS believes you are missing some key players in the overall value chain. Consider a "PEST" – Political / Economic / Social / Technology analysis - I think Fig 6.3 is missing the role of Government and Ofcom intervention into mobile markets e.g. by setting targets for coverage across the country for 5G by 2027 (as an example). We'd argue that it's mainly government/Ofcom pressure (incl for example the Ofcom Connected Nations report) that is causing focus on coverage and investment in the shared rural network. Considering more of an Enterprise view of the world – versus the consumer view Ofcom shows – it's easy to envisage a world where a big SI e.g. Accenture – deploys and manages a substantial number of highly profitable enterprise private 5G / WiFi deployments – and with sufficient volume, may start to exert influence on MNOs, potentially pushing them lower down in the value chain to be "dumb mobile signal" providers. Alternatively, especially where private 5G deployments may be put in place to cover large sites (for example: ports, large distribution centres, wind farms, airports), there may be an opportunity to "link" the private networks with MNO networks. We describe this above in the "Network of Networks" scenario above (P44, 5.27 – page 5 above), and we raised the question as to whether Ofcom regulation is required to facilitate these links in order to deliver better coverage across the country.

	An alternative scenario is as follows: if MNOs invest to win private 5G opportunities (and other 5G use cases), and actually provide the genuinely private networks that many enterprises are asking for, rather than just a slice of the public 5G network, those MNOs could achieve higher profitability, enabling them to invest more in their consumer services to win greater market share.
	Fig 6.3 seems to focus on a consumer market-only perspective, and does not take account of this potential enterprise view of the world.
	The role of ecosystems is also missing in Fig 6.3 – and these could have a significant impact on MNO profitability if MNOs take a leading (versus a passive) role here.
	P65, 6.38, 6.39: from your scenarios outlined, it does not appear that any of the direction will result in improvement in resilience in rural areas, where "time to repair" is most definitely an issue: Based upon anecdotal evidence in Scotland, outages on mobile masts in rural areas can take weeks to resolve – indeed it can take days or even weeks for issues to be even acknowledged.
As set out in Section 6, do you agree that quality of experience will become more important in the future? Do you agree that developing better information on quality of experience for customers will help further the delivery of good outcomes?	Yes, and even more so in enterprise (business) markets over consumer markets.
	However, where the challenge in the past 5 years has been 4G coverage, we believe the resilience of our 4G and 5G networks, together with mean time to repair, is where the networks need to focus on, over the next few years. MNOs are challenged in these regards in rural areas in particular – so development and regular monitoring of key metrics for rural areas could make a difference in how quickly (or not) service quality issues are resolved. For example, regular reporting of "time to repair" for each customer issue reported in rural areas could make interesting reading.
	P67: 6.45: "it can be difficult for customers to judge which is the best network to be on from a quality perspective."
	We wonder if e.g. a low cost 1 week SIM for "Try and Buy" could be made available to

	enable consumers to try various networks before signing up for a contract. As an example, the ACS has discovered a number of small businesses in rural areas that are not willing to sign up for FWA services because "we don't know if they will really work" at my location.
Do you think there is more that could be done to reduce barriers to customers receiving good indoor coverage (see Section 6)? If so, please outline what steps could be taken and what impact those steps would be likely to have.	The average consumer and small business are generally not aware of the technologies, including external aerials, WiFi calling, that could help solve their indoor reception problems. Ofcom and MNOs could help by raising awareness of potential solutions. In this regard, the recently announced consultation, "Implementing new rules to help people boost mobile signal indoors" is very welcome. That said, communication directed towards consumers, in order to raise awareness of potential solutions, is almost certainly the biggest gap.
Do you agree that clarifying our future regulatory approach will help encourage investment, as outlined in Section 7?	Not convinced. Summarising, you appear to have stated that you will stay away from regulation in general but step up where needed. This could easily be interpreted that Ofcom could still present a challenging regulatory regime, which may mute investment to a degree. One concern on the notion of allowing mergers between our current 4 MNOs relates to the consolidation of MNO infrastructure in event of a merger. In some parts of Scotland, we have only one, or perhaps two, MNOs offering service to a given area. A merge between these two, and removal of one set of infrastructure, could result in a loss of resiliency/redundancy. At Glencoe Mountain ski centre[9], for example, this past ski season is the first one in 4 or 5 years where – by using FWA from 2 mobile operators (EE and Vodafone) – they have had a network which is robust enough to operate credit card machines. In previous seasons, before the 2nd MNO arrived, they were at the

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[9] https://www.scotsman.com/lifestyle/outdoors/glencoe-mountain-ski-resort-battles-poor-internet-connection-forced-do-business-its-1899-344860

	mercy of network failures, and on multiple seasons experienced network outages or periods of intermittent failure lasting 2 – 4 weeks. Maintaining resiliency and multiple options must be a consideration, especially in rural areas where choice is limited and time to repair can be measured in weeks, if any major mergers between MNOs occur.
Are there any other potential barriers to the delivery of good outcomes over the next five to ten years that we have not considered? If so, please outline what these are likely to be, with supporting examples/evidence where possible, and any suggestions for how they might be reduced.	As discussed in the Consultation document, there are potential challenges with hyper-scaler participation in mobile markets. The concerns raised in the document by the MNOs appear valid, although anything involving net-neutrality implications is likely to be challenging. P70, 71: 7.5: The ACS suggests that Ofcom should recognise concerns of "over use" of network bandwidth by e.g. hyper-scaler applications. Today, some of the so-called "FANG" companies are able to make significant profits by (you have to say very successfully) leveraging the investments made by others (MNOs and CSPs) in pervasive networks. One can question whether MNOs and CSPs receive sufficient return from "free" apps that run over their networks and in cases chew up significant bandwidth, requiring ever increasing investment to cope with the ever-increasing data consumed by these apps. As a society, we have to ask whether this is a fair settlement for the MNOs and CSPs – and whether the current pricing models used by MNOs will sufficiently command appropriate value from both the suppliers and consumers of these applications and associated network bandwidth. Further, there is a challenge with asymmetric regulation. Today regulation is focused on technology e.g. SMS is regulated, WhatsApp is not. Perhaps there is a case for regulating by task rather than technology – so consistent regulation for "messaging" rather than just SMS could be considered.