



BBC response to Ofcom's consultation *Improving mobile coverage: Proposals for coverage obligations in the award of the 700 MHz spectrum band* and Ofcom's discussion document *Enabling 5G in the UK*

4 May 2018

Introduction

1. We welcome the opportunity to respond to the consultation *Improving mobile coverage: Proposals for coverage obligations in the award of the 700 MHz spectrum band*. This document also includes our comments on Ofcom's related discussion document *Enabling 5G in the UK*.
2. We believe Ofcom's proposals for coverage obligations will be essential to ensure the wide availability of mobile communications services to citizens and consumers. We also agree that people increasingly want access to key services on their mobile devices wherever they are and putting obligations in place at the point spectrum licences are awarded would be ideal.
3. However, we are concerned that 700 MHz coverage obligations may only partly deliver on the goal of ensuring that key services are available to all in the UK "at work, at home, or on the move". We believe that additional consideration may be needed.
4. We raise these concerns in the context of 700 MHz licences and Ofcom's discussion document as there is still uncertainty as to how services will be deployed over this spectrum.¹ We note Ofcom expects initial deployments to use 4G technologies and some MNOs see 5G deployments as being an evolution of this.² 4G already plays a role in extending the availability and convenience of access to media and content, and this may grow as deployments do. Looking to the future, many 'vertical' industries – including media and content providers like the BBC – may work with network operators to develop new models and ways of delivering popular services to end users at scale using 5G technology.³ If this occurs, existing regulation may not be sufficient.
5. Mobile technology is becoming a key part of the distribution ecosystem for audio and audio-visual content in the UK⁴ and in the longer term we think IP networks will be the sole means of distribution for such content. This transition is occurring alongside increased competition for audiences from global internet giants and increasingly vertically and horizontally integrated network operators who do not have incentives to sustain investment in a broad range of UK content or maintain news plurality. In response, the BBC is focused on providing the best programmes and services and developing the way we serve audiences to offer ever greater functionality, availability and convenience. In this changing environment lawmakers and regulators need to think about how to create a benign environment for public service broadcasting distribution if the benefits of PSB are to be retained.⁵

¹ Ofcom expect that 700 MHz will initially be used for 4G but 5G services might be deployed in this band in the future as 700 MHz has been identified as a key 5G band. See further Ofcom (discussion document), ['Enabling 5G in the UK'](#) 9 March 2018 and Ofcom (statement), ['Update on 5G spectrum in the UK'](#). 8 February 2017.

² Ofcom (discussion document), ['Enabling 5G in the UK'](#) 9 March 2018.

³ 5GPPP. ['5G empowering vertical industries'](#). 22 February 2016.

⁴ Smartphones are the device of choice for 18.5% of on-line viewing (BARB. ['The Viewing Report'](#). May 2018) and Cisco calculated mobile data traffic accounted for more than half of all mobile data traffic, although this is not all long form content (Cisco. ['Visual Networking Index: Global Mobile Data Traffic Forecast Update 2016-2021 White Paper'](#). 7 February 2017.

⁵ Many of the benefits of PSB are recognised by Ofcom in the document ['Public Service Broadcasting in the Digital Age: Supporting PSB for the next decade and beyond'](#). 8 March 2018.

6. This thinking is becoming increasingly urgent as regulatory protections on mobile networks, and IP networks more generally, have failed to keep pace with how audiences want to access PSB content today. This is particularly an issue in respect of inadequate guarantees to secure the widespread availability, prominence, and quality of delivery of PSB content delivered by IP by contrast with the regulatory safeguards around broadcast distribution.
7. This is a missed opportunity because media and content providers, and indeed other vertical industries, can help stimulate demand and drive mobile take up through provision of compelling content that audiences want to enjoy. The BBC, working with partners from across the value chain, on the Government's 5G Test beds and Trials programme is looking at gains that go beyond broadcasting to other sectors. For example, depending on the business model, cost efficiencies resulting from shared infrastructure could enable the 5G network to surpass the coverage of existing, application-specific distribution networks such as 4G and DAB.
8. We therefore believe **Ofcom needs to give further thought to the key role mobile networks – and 5G technologies in particular - are likely to play in the future in comprising an IP distribution network for important services including public service broadcasting.** This would recognise the importance of PSBs in promoting societal coherence, providing shared experiences, and maintaining a trusted space for those seeking out fairness and accuracy in an increasingly complex world. Such consideration would go further than the thinking Ofcom has set out in the 5G discussion document and would take account of Ofcom's requirement to secure the availability throughout the UK of wide range of TV and radio services as well as obligations to have regard to promoting the fulfilment of the purposes of public service television broadcasting.⁶ Until this work is completed we believe:
 - a) **Ofcom should keep options open that would allow additional regulatory safeguards – as well as new models of spectrum access – to develop to ensure public service broadcasters have fair access to mobile networks.**⁷ This might include a full consideration of the role 700 MHz might play in PSB distribution in future. One option would be to identify the right mechanism to put in place a targeted and proportionate regulatory backstop to ensure access, recognising the primary role that competition and competition policy will play in driving the development of networks in the interests of consumers.
 - b) **Ofcom should give a clear commitment to retaining net neutrality regulations.** These are an important tool to ensure customers can access the content they want – where and when they want to. Net neutrality has maintained a level playing field online promoting innovation 'without permission' from ISPs. Rolling back net neutrality rules could hinder this innovation⁸ and undermine competition between content providers.⁹

⁶ [Communications Act 2003](#), Section 3.

⁷ Such rules might also be needed as a result of convergence of fixed and mobile networks which will mean existing rules applicable to fixed distribution do not carry over to mobile. Ofcom's 'Enabling 5G in the UK' discussion document sets out the likelihood that fixed and mobile networks will become less distinct in the future.

⁸ Rolling back NN rules would raise the cost of pursuing innovation denying market entrants the opportunity to 'innovate without permission' from internet gatekeepers). These risks are further set out in Barbara van Schewick, 'Internet Architecture and Innovation.' Cambridge, MA: MIT Press. 2010.

⁹ Research suggests that that viewers are more likely to abandon slow loading videos. See <https://ecfsapi.fcc.gov/file/7522785302.pdf>

9. We set out more detailed comments below.

Q6: Do you agree with our proposals to include two geographic coverage obligations and a premises obligation in the 700 MHz award?

10. We think coverage could be improved by specifically including coverage obligations for gaps on major roads.

Q7: Do you have any other comments (includes the BBC's response to *Enabling 5G in the UK*)

11. While competition is an important driver of investment in telecoms networks, we agree with Ofcom's assessment that it will need to act to address coverage issues and ensure that availability of mobile services meets people's needs and expectations in the future. Ofcom's proposals for coverage obligations are therefore sensible. However, Ofcom should look to ensure that coverage obligations applied to 700 MHz licences will be sufficient in the future to ensure everyone has access to key services available "at work, at home, or on the move".

12. Earlier this year Ofcom restated its "important role, established by Parliament, to help PSBs adapt successfully" to changes in audience behaviours and set out its view that PSBs need to adapt too.¹⁰ Through our work on IP / internet-first distribution the BBC is actively working towards this future and is committed to going where our audiences are which is increasingly online and increasingly mobile.¹¹

13. The BBC's IP plans involve testing the '5G opportunity' for broadcasting so that if it delivers on its full potential, it would make a significant contribution to the UK Government's goal of making the UK a world leader in 5G technology.¹² We know there are business and regulatory challenges of distributing via mobile and 5G. But, as a publically funded broadcaster with a Royal Charter¹³ mission to promote technological innovation, we have the opportunity to engage in these issues – it's why we're participating in the 5G trials and why we're responding to this consultation. We are also mindful of our Royal Charter obligations to look to partnerships and will explore opportunities to work collaboratively with other broadcasters about how the regulatory, commercial and technical challenges can be tested and overcome.

The importance of compelling content

¹⁰ See paragraph 1.7 of Ofcom. '[Public Service Broadcasting in the Digital Age: Supporting PSB for the next decade and beyond](#)'. 8 March 2018.

¹¹ 'Mobile' in this context refers to consumption on smartphones as well as consumption of content delivered via mobile networks.

¹² See further DCMS. [Digital Strategy](#). 1 March 2017 & DCMS. [Next Generation Mobile Technologies: An update to the 5G strategy for the UK](#). December 2017.

¹³ The BBC [Charter and Agreement](#). December 2016.

14. For the UK to take an early lead in 5G, regulators and industry need to work together with the UK Government to test its benefits to, and potential UK global leadership in, key issues of UK competitive strength, such as broadcasting.
15. Take-up will be a critical factor in determining whether the UK leads the world in 5G because availability alone is not enough if the UK is to derive the full economic and social utility of greater connectivity. While supply-side competition drives greater availability, so too does demand stimulation by improving the rollout investment case and allowing capital expenditures to spread further. Historically, audiovisual content – and services like BBC iPlayer – have played an important role in demand stimulation, and we see this role increasing as new mobile services are launched.
16. The BBC is investing in this mobile future in a number of ways. We have:
 - a) Partnered with EE to conduct stadium-scale trials of the Evolved Multimedia Broadcast Multicast Services (eMBMS) mobile standard, allowing efficient one-to-many simultaneous delivery of content to multiple users;
 - b) Contributed to the setting of international mobile standards via 3GPP working with other European PSBs in the standardisation group to enhance the eMBMS standard to take full advantage of the benefits of 5G technology;
 - c) Committed to collaboration on 5G-Xcast, a Horizon 2020 collaboration between ‘vertical’ industries¹⁴ to develop an architecture that allows seamless reception of content on different devices as users move between different environments and available networks.
 - d) And in 2017, the BBC joined two consortia which have since been successful in bidding for funding in the DCMS’s 5G Phase 1 Trials and Testbeds programme.
17. One of these trials looks at the potential for 5G enabled mobile AR/VR experiences to ‘modernise’ the tourism industry, delivering new digital experiences at historic UK locations such as the Roman Baths. The other consortium is looking at the use of 4G and 5G eMBMS to deliver radio programmes to remote rural areas of Scotland. Initially, existing BBC live, linear radio services (such as BBC Radio Scotland) will be offered to users over the broadcast mode using 700 MHz spectrum. However, a key element of the trial is to experiment with new and innovative broadcast and unicast applications to deliver to users a more personalised and immersive experience than is widely possible today.
18. We believe new mobile technology could do broadcasting better and offer opportunities for the UK’s mobile industry, making investments go further and faster. But as more and more services are delivered over mobile there is an increased risk of gatekeeping by network operators if sufficient protections are not in place. This has led to concerns in the wider broadcasting industry about a transition to an IP future – and justifiably so. There is reluctance to move away from distribution networks where there are regulatory protections while at the same time audiences are being cannibalised by non-UK platform giants.
19. We therefore believe before awarding 700 MHz licences Ofcom should consider: (1) making a firm commitment to maintaining net neutrality rules and (2) fully exploring how citizen benefits like those

¹⁴ Media and Entertainment, and Public Warning

resulting from PSB will be protected if mobile networks including 700 MHz become significant in distributing PSB content in the future.¹⁵ We explore these issues in greater detail below.

Importance of retaining net neutrality rules

20. At present net neutrality (NN) rules apply to the provision of mobile broadband services – and we expect these will continue to apply to 5G technologies. We welcome Ofcom’s support for BEREC’s net neutrality guidelines (paragraph 1. 29) in the 5G Discussion Document¹⁶, but we note elsewhere Ofcom refers to NN as a potential barrier to 5G deployment.¹⁷
21. We believe there should be clear analysis and evidence of the risks on either side of the debate before any revision to the current net neutrality rules is considered. There is no evidence that currently shows NN rules and BEREC guidelines impede roll out and investment in networks. On the contrary, BEREC’s analysis suggests that the existing Rules and Guidelines foster an approach allowing 'specialised services' to continue to co-exist dynamically alongside a robust internet access services (IAS). Indeed, the Guidelines recognize that "[N]etwork-slicing in 5G networks may be used to deliver specialised services."¹⁸
22. The BBC is concerned that Ofcom’s emphasis on considering NN as a barrier to deployment of 5G is not accompanied by recognition of the potential risk of removing these important consumer protections. Net neutrality also promotes innovation by setting a low barrier for entry for creators and ensuring a level playing field online where content and app providers like the BBC can access and compete for end-users ‘without permission’ from ISPs.
23. The UK’s initial approach to net neutrality has been praised as being an effective tool for consumers and has been supported by Ofcom.¹⁹ That approach then formed the basis for EU regulations and the UK’s self-regulatory code agreed by ISPs, MNOs and content providers. Any move to roll back regulation needs to be balanced against the importance to the digital economy and to internet users of preserving the open internet that NN rules are intended to ensure. We would therefore encourage Ofcom to explicitly state its intention to guard against this risk.

Risk of gatekeeping

24. Unchecked, we believe there is a risk that delivery of services over mobile networks will be increasingly gatekept by network operators to the possible detriment of PSB as well as citizens and consumers.

¹⁵ If future mobile networks develop along similar lines to those deployed today it is likely that 700 MHz will be part of an interconnected system of different fixed and mobile infrastructure over which PSB content travels. We raise issues of access in respect of this spectrum due to the role this spectrum might play in ensuring coverage to audiences in hardest-to-reach areas.

¹⁶ Ofcom (discussion document), [‘Enabling 5G in the UK’](#) 9 March 2018.

¹⁷ See for example paragraph 4.61 Ofcom (discussion document), [‘Enabling 5G in the UK’](#) 9 March 2018.

¹⁸ BEREC. [‘Guidelines on the Implementation by National Regulators of European Net Neutrality Rules’](#) August 2016. (see footnote p. 25).

¹⁹ Ofcom (statement), [‘Traffic Management and Net Neutrality’](#), November 2011.

25. The BBC's response²⁰ to Ofcom's 2015 Strategic Review of Digital Communications²¹ sets out these risks in the context of a transition to IP PSB distribution and Ofcom's subsequent statement recognised these concerns.²²
26. In a future where audio and audio-visual content is distributed predominantly over IP networks, MNOs, like fixed line ISPs, may be incentivised to use a variety of means of requiring payments from content and application providers, based on a two-side market model. This might involve rentseeking, making the only way to access their customer base with a quality audio or TV experience contingent on payment for carriage. This would result in three unenviable options for PSBs:
- a lessening of availability if gatekeeping made it impossible/unviable to access audiences
 - a lower quality of service should managed services cause real detriment to OTT delivery
 - being forced to pay for carriage and – for the BBC in particular, with its constrained funding levels - see money diverted from UK content.
27. Ofcom has recently recognised the importance of PSB, but also the challenges facing it, given that the existing regulatory regime requires modernisation: “[PSB] can adapt again to the challenges of the digital age if it takes the right action, **with the support of Parliament and the regulator.**” (Our emphasis).²³ This echoes similar concerns expressed previously by Ofcom in the TV-specific analysis laid out in Ofcom's Free to View Discussion Document which judged that those entities controlling internet access could act as new gatekeepers over the distribution of broadcast services over IP “[e]specially if content providers have to rely on their managed services to provide a quality TV experience.”²⁴
28. We believe that Ofcom should recognise this risk in the context of its 5G thinking – especially if these networks evolve, as is likely, from the existing mobile broadband networks structure thus increasing the risk of gatekeeping for PSBs.

There is a great deal of uncertainty as to how will services be deployed in 700 MHz

29. It is still unclear which technologies will be used to deliver services over 700 MHz spectrum. If 5G is deployed, some observers believe that 5G will be just another “broadband pipe” and an extension to 4G. However, others argue that 5G networks are likely to evolve differently from existing mobile networks in order to facilitate delivery of different services in different ways.²⁵

²⁰ BBC, [Response to Ofcom's Strategic Review of Digital Communications Discussion document](#), 8 October 2015.

²¹ Ofcom. [Strategic Review of Digital Communications: Discussion Document](#). 16 July 2015.

²² “In principle, platforms may have the ability to act as a ‘gatekeeper’, setting unreasonable terms on which broadcasters and content providers can access viewers.” Ofcom (statement), ‘[Making communications work for everyone: initial conclusions from the Strategic Review of Digital Communications](#)’ 25 February 2016.

²³ Ofcom. ‘[Public service broadcasting in the digital age: Supporting PSB for the next decade and beyond.](#)’ March 2018. See also paragraph 3.10 which states “While regulation guarantees public service broadcasters’ prominence on the traditional ‘linear’ channel programming guide, the rules were designed before the advent of digital media and do not apply to them. Regulation has ensured that the main PSBs rank high in linear TV guides. By contrast, PSB prominence on connected devices, such as smart TV sets or online services, is unregulated.”

²⁴ Ofcom. ‘[The Future of Free to View](#)’. May 2014.

²⁵ As set out in Ofcom's discussion document ‘[Enabling 5G in the UK](#)’. 9 March 2018.

30. One proposed model of mobile network operation could be facilitated by network slicing allowing networks to meet the needs of vertical industries (broadcasting, transport, health, etc) even though these verticals have different performance requirements. In this way, a variety of vertical industries could provide different services to different end users over the same network, without the need for a specific spectrum licence to be held by each vertical.²⁶
31. In addition to the technology questions, there are still unanswered questions regarding what the business model will be. For example, will vertical industry players lease spectrum from one or more mobile network licence holder or “pay per megabyte” to have access to reserved capacity.

Ensuring PSB access

32. Since the way networks will operate is uncertain, we believe Ofcom needs to give further consideration to the key role wireless networks – and 5G technologies in particular - are likely to play in the future in providing an IP distribution network for important services including public service broadcasting. Such consideration would go further than the thinking Ofcom has set out in the 5G discussion document and would cover Ofcom’s requirement to secure the availability throughout the UK of wide range of TV and radio services as well as obligations to have regard to promoting the fulfilment of the purposes of public service television broadcasting.²⁷
33. One option would be for Ofcom to be clear that fair, reasonable and non-discriminatory (FRND) access would be mandated for any network (or network slice) designed for media delivery. This would be justified to help foster pluralism and diversity of viewpoints.
34. Depending on how 5G deployment proceeds, Ofcom might also need to consider different regulatory models. For example, if a clear distinction between the transmission providers and those companies providing services ‘over the top’ of the 5G network emerges, Ofcom may want to consider alternative regulatory approaches to ensure ‘over the top’ services are delivered to end users across the country. A set up like this would keep options available to apply conditions to what is transmitted on top – enabling different regulatory approaches (e.g. to resilience) to different networks.
35. We would therefore suggest considering whether it would be appropriate to put a marker down at the time 700 MHz licences are awarded so that additional regulation could be put in place to ensure delivery of PSB services over 5G networks using this spectrum if required.
36. Ofcom are already proposing to impose coverage obligations on 700 MHz licences, and we understand the importance of maintaining regulation that is targeted and proportionate. Before 700 MHz licences are awarded, we would encourage Ofcom to give further consideration to the issues we have raised in this response, and consider whether there are appropriate mechanisms in place to ensure access to wireless networks for PSBs if gatekeeping emerges as an issue in the future. If additional requirements are deemed appropriate these might:

²⁶ Alternatively, verticals might seek dedicated spectrum assignments to deploy specific functionality in the radio access network (RAN) not provided by nationwide mobile networks. For example, broadcasters are interested in the latest eMBMS functionality incorporated in 3GPP Release 14, which could be deployed for future linear broadcasting use.

²⁷ [Communications Act 2003](#). Section 3.

- a. only be invoked if wireless networks become significant means for audiences to access content in the future;
- b. only be applicable in a scenario under which media was delivered via a dedicated network slice or specialised service and audiences would reasonably expect PSB content to be available on that network;
- c. a regulatory *backstop* - only to be used if an agreement couldn't be achieved through commercial negotiations to ensure audiences could retain access to PSB.

37. Finally, any conditions would not necessarily need to dictate terms and therefore would not cause financial detriment to licence holders in the same way that coverage obligations do.

38. Since it is still far from certain whether these issues will even become concerns in the future we would suggest Ofcom consider the issue of consumption of audio visual content over mobile networks as part of the forthcoming PSB review. Ofcom might also consider the issue of radio consumption via mobile networks as part of its work on digital radio switchover. Ofcom's BAU reviews (e.g. Connected Nations Report) could provide another option for a periodic review of how these markets are developing and how audiences are accessing PSB content via mobile networks.

The risk of interference to adjacent band services

39. Finally, we have noted the recent statement by Ofcom²⁸ considering the risk of interference from mobile handsets in the lower part of the 700 MHz band to DTT services below 700 MHz. In this statement, Ofcom concludes that its previous technical work on the impact from handsets to DTT reception is minimal and that, should it occur, the provision of additional filtering for DTT receivers would provide suitable remedy. The BBC does not dispute Ofcom's findings, but would also point out that the problem could be further mitigated during the assignment process by ensuring that the smaller bandwidth allocations are placed at the lowest frequency (i.e. closest to the DTT frequencies).

ENDS.

²⁸ Ofcom consultation. [Coexistence of new services in the 700 MHz band with digital terrestrial television](#). 13 December 2017