
Improving mobile coverage:

Proposals for coverage obligations in the award of the
700 MHz spectrum band

CONSULTATION:

Publication Date: 9 March 2018

Closing Date for Responses: 4 May 2018

About this document

Ofcom has a duty to ensure the wide availability of communications services to citizens and consumers. Current levels of mobile coverage are not meeting consumers' needs, and our recent Connected Nations 2017 report showed that mobile coverage is particularly poor in rural areas, including in the Nations.

The 700 MHz spectrum band is a valuable piece of spectrum, currently used for Digital Terrestrial Television (and for Programme Making and Special Event use) which we are planning to award to mobile services in the second half of 2019. We are undertaking a major clearance programme for the band. The technical characteristics of the 700 MHz band make it suitable for improving mobile coverage.

To ensure widespread improvements in mobile coverage across the UK, we are proposing to attach coverage obligations to some of the licences we will award for the 700 MHz band. These obligations will require winning bidders to roll out improved mobile coverage in rural areas and the Nations. This consultation seeks views on our proposals for these coverage obligations.

Given the scale of the problem, this approach will not be able to fix all mobile coverage issues consumers face today. Our proposals therefore form an important part of a wider body of work aimed at improving mobile coverage in the UK.

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1. Executive Summary

Improving mobile coverage is a priority for Ofcom

- 1.1 Our expectations of mobile services are changing as they become ever more central to our lives. Consumers increasingly want to use their mobile devices wherever they are – at work, at home, or on the move. However, whilst mobile coverage has improved in recent years, it still falls short of the needs of people and businesses in many areas. A significant proportion of the UK’s landmass, particularly in rural areas, still does not receive good quality mobile coverage. For example, 30% of the UK’s landmass is not covered by all four mobile operators. This increases to 60% in Scotland. Furthermore, only 18% of premises in rural areas get indoor 4G coverage from all four operators.¹ Improving mobile coverage is one of the most important challenges we think the telecoms industry faces.
- 1.2 We have a statutory duty to ensure the widespread availability of mobile voice and data services throughout the UK, and to have regard to the different interests of people living in the UK, including those living in rural areas. We have therefore considered whether competition itself would address these coverage issues.
- 1.3 Competition is an important driver of investment in telecoms networks. However, building the mobile sites necessary to extend coverage in areas of low population density is often unprofitable. Consequently, we think that action from Ofcom is required to address the coverage issues that exist today.

The forthcoming award of 700 MHz spectrum is an important opportunity to improve mobile coverage

- 1.4 One of the key levers Ofcom has for improving coverage is including obligations in new spectrum licences at the point they are awarded. In the second half of 2019 we plan to auction spectrum, located in the ‘700 MHz band’, that will support mobile services. These airwaves can play an important role in improving mobile coverage because they are good at penetrating walls and other obstructions.
- 1.5 In our 2015 Strategic Review of Digital Communications we set out our intention to impose coverage obligations in some of the licences we award in the 700 MHz auction. This document sets out our initial proposals for these coverage obligations.
- 1.6 Whilst the award of the 700 MHz band is an important opportunity to help improve coverage, it will not solve all of the UK’s coverage problems. In order to stimulate the

¹ Ofcom, 2017. *Connected Nations*. https://www.ofcom.org.uk/_data/assets/pdf_file/0024/108843/summary-report-connected-nations-2017.pdf

improvements in coverage consumers expect, further measures will be needed. We discuss this below.

We propose including three obligations in the 700 MHz award, with a focus on rural areas and guaranteed improvements in each Nation of the UK

- 1.7 We propose to set coverage obligations to deliver improvements for those rural communities that are least likely to benefit from commercial rollout. We also want to ensure that the benefits of the obligations are fairly distributed between the UK's Nations. With these objectives in mind, we propose setting three coverage obligations:
- a) one obligation focused on where people live (the "premises" obligation), and;
 - b) two focused on improving outdoor coverage across the UK's landmass (the "geographic" obligations).
- 1.8 The premises obligation would require the successful bidder to deliver good quality in-building coverage to 60% of the 200,000 residential and business premises in rural areas that we predict will lack good indoor coverage from any mobile operator at the time of the 700 MHz auction. These premises are distributed throughout the UK's Nations. We also propose stipulating that the obligation holder provides coverage to 60% of the uncovered rural premises in each nation.
- 1.9 Mobile coverage in the home is important. It supplements and can sometimes replace fixed line telephone and fixed broadband services. Consumers value the ability to use their mobile at home and in their local area, as well as when travelling farther afield. The premises obligation we are proposing would enhance social inclusion in those rural communities with poor mobile coverage. It would help those who do not have access to a reliable fixed broadband connection to go online to access essential services and would make it easier for them to keep in touch with family and friends.
- 1.10 The geographic obligations would require the operators to provide good voice and data services² across at least 92% of the UK's total landmass. They would also require the successful bidders to improve the coverage they provide in each of the Nations. At present, Scotland and Wales have much lower geographic coverage than England and Northern Ireland. We are proposing national requirements which seek to ensure the greatest uplift in the Nations that have the lowest coverage today. The obligations also reflect the very different starting points in terms of current geographic coverage, as well as the differing geography of each Nation. In particular, Scotland and Wales have a

² As explained below, we only consider an area to be covered if it receives a strong enough signal for a smartphone user to get a good voice and data service. This means allowing nearly all voice calls which last for at least 90 seconds to be made and completed without interruption and nearly all data connections to deliver a speed of at least 2 Mbps. This is fast enough for users to browse the internet and watch glitch-free mobile video.

significant amount of landmass which is sparsely populated relative to the rest of the UK.

- 1.11 We propose the successful bidders should be required to improve the coverage in each Nation to at least the following levels:
- a) 92% in England;
 - b) 92% in Northern Ireland;
 - c) 83% in Wales; and;
 - d) 76% in Scotland.
- 1.12 Under these measures, Wales would receive an 8pp increase in coverage from an average operator today; Scotland 12pp. England and Northern Ireland would be assured coverage at least at the level of the overall UK requirement, and the UK wide requirement may drive even higher levels of coverage in individual Nations.
- 1.13 We estimate that at least 95% of the new coverage resulting from the proposed geographic obligations would have to be in rural areas. The obligations would therefore provide benefits particularly to consumers working and living in rural areas. They would also provide benefit to other consumers when they are visiting or travelling through these areas. They would help people to access information and essential services whilst on the move, and help rural businesses stay in touch with clients and suppliers.
- 1.14 We propose requiring the operators to deliver the required new coverage within three years of the award being complete. The auction is planned for the second half of 2019, so we would expect these obligations to be delivered before the end of 2022. In proposing this, we seek to balance the level of commercial challenge in delivering new coverage – including getting planning permission for and deploying new mast sites in more remote locations – and the benefits to consumers of realising this new coverage in a timely way. In practice, we would expect some of the new coverage to be delivered sooner.
- 1.15 We think that the costs of meeting our proposed obligations are such that operators will be willing to acquire them. If we set more extensive obligations than we are proposing, we consider there would be a risk that the operators would not be willing to do so. Taken together we believe these proposals would deliver significant benefits to people and businesses across all the UK's Nations, especially in rural areas.

We will set these proposed coverage obligations based on our current approach to measuring coverage

- 1.16 As we explained in our 2017 *Connected Nations* report, and in line with a recommendation from the National Infrastructure Commission (NIC) we have changed

the way in which we measure coverage.³ This is because smartphones require stronger signals than older, simpler phones in order to function effectively. Therefore, we only consider an area to be covered if it receives a strong enough signal for a smartphone user to get a good voice and data service.⁴ This is the approach to measuring coverage we are applying to these proposed obligations.

- 1.17 Previous coverage obligations used a different approach. It is therefore difficult to compare on a like-for-like basis the headline levels of coverage delivered by previous coverage obligations with the levels of coverage that would be required by the proposals in this document. For example, in December 2014 the mobile operators agreed to provide voice coverage to 90% of the UK's landmass by no later than 31 December 2017 and they have met that obligation.⁵ However, that obligation was defined in terms of voice coverage, using signal strengths that are lower than in our new approach.
- 1.18 Later this year, we will set out for stakeholders the criteria and methodology that we propose to impose for assessing compliance.

We think earlier sharing of information about new rural sites can maximise benefits for consumers

- 1.19 Sharing new mobile infrastructure between mobile operators can significantly reduce the costs of deployment, whilst also bringing the benefits of new coverage to a wider set of customers. Whilst we are keen to see greater sharing, we are concerned that exploring sharing opportunities may not always be a priority for mobile operators as they focus on deployment.
- 1.20 In order to facilitate this, we consider that it may be appropriate for operators to make information about the location of new sites in rural areas available to the other operators at least 30 days in advance of a planning notification. We expect that this earlier disclosure would provide more time for other operators to consider and discuss the benefits of shared deployment and voluntarily engage in joint design, where this is appropriate.

³National Infrastructure Commission, 2016. *Connected Future Report*, <https://www.nic.org.uk/publications/connected-future/>

⁴ See definition in footnote 2.

⁵ Ofcom, 2015. *Ofcom varies mobile operators' licences to improve coverage*. <https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2015/mno-variations>; <https://www.ofcom.org.uk/spectrum/information/cellular-coverage>

Working with UK and Devolved Governments, we continue to engage in a broader programme of work to improve coverage

- 1.21 In order to deliver the levels of mobile coverage that people and businesses increasingly expect, further action is required in addition to our proposals for the 700 MHz award. Working closely with UK and Devolved Governments, we are engaged in a major programme of work to improve coverage. Key components of this include:
- a) The UK and Scottish Governments have introduced significant changes to the planning regimes in England and Scotland in the last two years. These make it easier for mobile operators to expand their networks, including through the use of “permitted development rights” to enable the deployment of taller masts without planning permission. The Welsh Government is considering similar changes to the planning regime in Wales. Northern Ireland has a different planning regime process;
 - b) The UK Government is examining options for improving coverage on railways. Ofcom is considering suitable spectrum bands that could support better passenger connectivity on trains;
 - c) The Scottish Government has launched a procurement programme to deliver improved 4G coverage in Scotland. The Welsh Government’s Mobile Action Plan pledges to consider a publicly funded intervention;⁶
 - d) Ofcom provides accurate accessible coverage information through a mobile coverage app and a mobile coverage checker on our website. This helps consumers make an informed choice about what mobile provider is best for them. Greater transparency also helps drive further competition between the operators on coverage; and
 - e) Ofcom has recently announced its intention to enable the use of mobile repeaters without the need for a licence. These devices allow people and businesses with good outdoor coverage to get a good signal indoors, or in their vehicle.
- 1.22 In light of the scale of the challenge, we will need to work with the mobile operators, UK and Devolved Governments and other stakeholders to explore other options to improve mobile coverage. As part of this wider programme of work, we intend to explore what role increased levels of infrastructure sharing could play in improving coverage in areas where one (or more) operator already has coverage but others do not.

⁶ The Scottish Government, 2016, *Mobile Action Plan* <https://beta.gov.scot/publications/mobile-action-plan/>
The Welsh Government, 2017, *Mobile Action Plan* <http://gov.wales/topics/science-and-technology/digital/infrastructure/mobile-action-plan/?lang=en>

Next steps

- 1.23 This consultation closes on **4 May 2018**.
- 1.24 Stakeholders will have a further opportunity to comment on our coverage proposals in light of our overall proposals for the auction and its rules later in the year. We intend to take final decisions on coverage obligations at the same time as final decisions on wider auction design, by spring 2019.
- 1.25 We anticipate holding the 700 MHz auction in the second half of 2019, with the spectrum available for use in mid-2020.

2. The 700 MHz award is an important opportunity to improve coverage

2.1 In the second half of 2019 we plan to auction spectrum in the 700 MHz band for mobile use.⁷ These airwaves pass through walls and other obstructions more easily than signals transmitted at higher frequencies. They are therefore well suited for improving mobile coverage. In our 2015 Strategic Review of Digital Communications we said we would impose coverage obligations in some of the licences we award in the 700 MHz auction. This document sets out our initial proposals for these coverage obligations.

We have a number of relevant statutory duties and powers

2.2 Our principal duty in carrying out our functions is to further the interests of citizens, and the interests of consumers where appropriate by promoting competition (2003 Act, s.3(1)).

2.3 We consider that these further statutory duties are of particular importance in this context:

- a) our duty to secure, in the carrying out of our functions:
 - i) the optimal use for wireless telegraphy of the electro-magnetic spectrum (2003 Act, s.3(2)(a)); and
 - ii) the availability throughout the UK of a wide range of electronic communications services (2003 Act, s.3(2)(b));
- b) our duty to have regard, in performing our duties, to:
 - i) the desirability of promoting competition in relevant markets (2003 Act, s.3(4)(b));
 - ii) the desirability of encouraging investment and innovation (2003 Act, s.3(4)(d));
 - iii) the desirability of encouraging the availability and use of high speed data transfer throughout the United Kingdom (2003 Act, s.3(4)(e));
 - iv) the different interests of persons in the different parts of the United Kingdom and of persons living in rural and in urban areas (2003 Act, s.3(4)(l)); and
 - v) the interests of consumers in respect of choice, price, quality of service and value for money (2003 Act, s.3(5)).

2.4 We have had regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed (2003 Act, s.3(3)(a)). We have also taken account of the need for our

⁷ The 700 MHz band consists of spectrum with frequencies between 694 MHz and 790 MHz.

proposals to be objectively justifiable, not unduly discriminatory, transparent and proportionate (WT Act, s.9(7)).

- 2.5 In this consultation, we have put particular weight on our duty to ensure the widespread availability of mobile services throughout the UK, noting that this needs to be balanced with our other relevant duties.
- 2.6 In Annex A5, we set out in more detail the relevant legal framework (including our approach to assessing the impact of our proposals), which we have taken into account in making these proposals. This annex should be treated as part of this document.

Coverage is currently not good enough

- 2.7 Indoor and outdoor mobile coverage in the UK has improved significantly in recent years. The area of geographic landmass receiving outdoor coverage from all mobile operators for telephone calls and 4G data service has increased in the last year, by 7% and 22% respectively.^{8 9}
- 2.8 However, coverage is still not good enough. Many consumers still experience poor coverage, especially in rural areas. In mid-2017, 30% of the UK's landmass did not receive voice coverage from all mobile operators. Moreover, 12% of the UK landmass did not have voice and data coverage from any mobile operator. Furthermore, each operator falls around 2-3% or more short of covering all premises in the UK with good quality voice and data coverage, as we set out in Figure 2.1 below.

⁸ 4G is the latest generation of mobile technology, capable of supporting high speed data services. Mobile operators are now planning the roll-out of 5G services, which will provide even higher data speeds and other benefits such as improved capacity, reliability and latency. The first 5G-enabled handsets are likely to become available from 2019.

⁹ Ofcom, 2017, *Connected Nations* https://www.ofcom.org.uk/__data/assets/pdf_file/0024/108843/summary-report-connected-nations-2017.pdf

Figure 2.1: Extent of Individual Operators Good Voice and Data Coverage Across the UK. ¹⁰

	Indoor Voice Coverage	Indoor Data Coverage	Geographic Voice Coverage	Geographic Data Coverage
EE	95%	95%	79%	77%
O2	98%	97%	84%	77%
Vodafone	97%	96%	86%	77%
Three	95%	89%	78%	72%

Source: Ofcom Analysis of Operator Information Provided for Coverage as of June 2017

2.9 There are also significant differences in the extent of voice and data coverage for all four operators across the Nations. This reflects the greater proportion of rural areas in Scotland, Northern Ireland and Wales.

2.10 It also reflects differences in the topography and population density of each Nation. A significant proportion of Scotland is made up of large mountainous areas with very low population densities (Scottish National Heritage classifies 19% of Scotland as “wild”).¹¹ Wales also has a large proportion of rural and mountainous areas. The commercial case for providing coverage in such areas is often relatively weak because:

- a) providing coverage in remote or mountainous areas poses technical challenges and is expensive; and
- b) footfall is limited, so covering these areas does not tend to generate significant revenue.

¹⁰ Ofcom, 2017. *Connected Nations*, 34. Note that this table reflects a combined 3G and 4G view of data and that, as we set out below, 3G is likely only meet our threshold for good coverage in the future in certain circumstances. We have taken this into account in forming our view of the targets set out later in the document, as well as information operators have provided us with about any additional rollout they may be planning to undertake.

¹¹ Scottish Natural Heritage, 2014. *Advice to the Scottish Government*. <https://www.nature.scot/sites/default/files/2018-02/CAWL%202013%20map%20-%20Advice%20to%20Government%20-%20Revised%20Final%20-%202017%20June%202014%20.pdf>

Figure 2.2: Coverage for Telephone Calls and Data Across UK Nations by all four operators ¹²

	Indoor coverage, % premises		Geographic coverage, % landmass		A and B roads, % road network	
	Telephone Calls	Data	Telephone Calls	Data	Telephone Calls	Data
UK	90%	85%	70%	63%	68%	58%
England	91%	87%	88%	82%	78%	66%
Northern Ireland	78%	75%	83%	76%	62%	54%
Scotland	87%	82%	40%	31%	46%	38%
Wales	80%	73%	63%	52%	53%	41%

Source: Ofcom analysis of Operator Data Provided for Coverage as of June 2017

Expanding mobile coverage would benefit people and businesses

- 2.11 Consumers value mobile coverage highly. They expect to be able to use their mobile phones wherever they go and particularly prize the ‘always on’ quality of good mobile voice and data.¹³ For most people, optimal mobile coverage would amount to the ability to use every function of a modern smartphone, everywhere, all of the time. There is evidence that some consumers in more rural areas currently place a higher priority on a reliable voice service than on data services.¹⁴ However, over time, consumers are likely to increasingly expect a fuller set of services to be available requiring a good quality data service.
- 2.12 Without coverage, people face barriers to participating fully in society. In research commissioned by Ofcom, people and businesses located in areas of patchy or poor mobile

¹² Ofcom, 2017 *Connected Nations*, 37. Note that this information for ‘all operators’ shows the extent to which operator footprints overlap, and coverage from individual operators will be higher. It provides a useful guide to the differences in the extent of provision across the UK Nations. Note that Data coverage here is a combination of 3G and good 4G coverage.

¹³ Jigsaw, 2017. *Mobile Coverage: Qualitative research*. <https://www.ofcom.org.uk/research-and-data/telecoms-research/mobile-smartphones/jigsaw-research-2017>

¹⁴ Jigsaw, 2017. *Mobile Coverage: Qualitative research*.

coverage reported a wide range of negative social and commercial impacts.¹⁵ These ranged across several aspects of their day to day life and included: difficulties contacting friends, family and clients; difficulties checking train times; and concerns about being unable to contact the emergency services.

2.13 Improvements in mobile coverage would also benefit citizens and consumers in a number of ways:

- a) Support flexible or home working. This could expand employment opportunities, reduce commuting times and enhance the productivity of rural businesses.¹⁶
- b) Increasing business productivity, allowing employees to make the most out of downtime during the day and not having to delay tasks until they get home. For example, it allows people to keep on top of emails between different site visits, or make calls and respond to queries from customers when out and about.¹⁷
- c) Allowing rural businesses to enjoy the benefit of mobile services widely used elsewhere. For instance, making use of apps and services that rely on mobile coverage to provide users with real-time travel or traffic updates.¹⁸
- d) Support health and safety: the majority of residential and SME consumers regard their phone as a crucial safety net that enables them to deal with emergency situations. These range from inconvenience (such as running late to a meeting) to contacting emergency services in a life-threatening situation.¹⁹

2.14 In view of this, citizens and consumers would benefit significantly if mobile coverage improved. Amongst other things, improvements in mobile coverage would generate social value by helping to reduce the ‘Digital Divide’ between those who have access to the latest technologies and those that do not. The Government’s Digital Strategy for 2017 stated that “broadband and mobile must be treated as the fourth utility”.²⁰

2.15 In practice, consumers’ frustration with poor mobile services may sometimes relate to other issues, such as congestion over the network, rather than poor mobile coverage per se. The proposals set out in this document do not aim to address such circumstances. The release by Ofcom of additional spectrum for mobile use, combined with commercial investment by mobile operators, will provide further options to alleviate any capacity issues. This includes the award of new mobile spectrum in the 2.3 GHz and 3.4 – 3.6 GHz bands which is currently underway.

2.16 Mobile operators are still expanding their networks and are likely to improve coverage above today’s levels in the coming years. However, they have indicated to us that future

¹⁵ Jigsaw, 2017. *Mobile Coverage: Qualitative research*.

¹⁶ DEFRA, 2014. *Policy brief – how increased connectivity is boosting economic prospects of rural areas*, 1.

<https://www.gov.uk/government/publications/how-increased-connectivity-is-boosting-economic-prospects-of-rural-areas>;

¹⁷ Jigsaw, 2017. *Mobile Coverage: Qualitative research*, 13, 21.

¹⁸ Jigsaw, 2017. *Mobile Coverage: Qualitative research*, 15-16.

¹⁹ Jigsaw, 2017. *Mobile Coverage: Qualitative research*, 10.

²⁰ DCMS, 2017. *UK Digital Strategy*. <https://www.gov.uk/government/publications/uk-digital-strategy/uk-digital-strategy>.

rollout is unlikely to extend the coverage footprint by a significant amount. Operators will only tend to expand coverage where the expected commercial benefit exceeds the cost of expansion. We therefore consider that action from Ofcom is required to address the coverage issues that exist today.

- 2.17 Given the coverage problems the UK faces and in light of our statutory duties, improving mobile coverage is a priority for Ofcom. In particular, we think improvements need to be made in the availability of mobile services in rural areas.

The 700 MHz award is an important opportunity to improve coverage

- 2.18 The most direct lever we hold is the ability to include coverage obligations in new spectrum licences. Coverage obligations have a track record of securing improvements in mobile coverage. For example, when we auctioned spectrum in the 800 MHz band for mobile use in 2013, we included a coverage obligation in one of the licences (the '2013 coverage obligation').²¹ This obligation required the holder of the licence, O2, to cover an area of the United Kingdom where at least 98% of the population lived. We believe this obligation has played an important role in bringing forward some of the recent increases in 4G mobile coverage.
- 2.19 The forthcoming auction of new spectrum licences in the 700 MHz band therefore presents us with a key opportunity to improve mobile coverage and we think that including coverage obligations in that award is appropriate.

We will measure coverage using our current metrics

- 2.20 In our Connected Nations 2017 report, we set out a new approach for defining mobile coverage in a way that related to consumer experience and would satisfy modern smartphone users. We have introduced this new approach to measuring coverage since smartphones require stronger signals than older, simpler phones in order to function effectively. We are using this new approach to measuring coverage here for the coverage obligations that we are proposing to include in the award of the 700 MHz band.
- 2.21 We set out in Connected Nations 2017 our view that today's consumers are likely to be satisfied with coverage when:
- a) Voice calls: nearly all mobile calls which last for at least 90 seconds can be made and successfully completed without interruption;
 - b) Data services: nearly all connections should deliver a speed of at least 2 Mbps. This is fast enough to allow users to browse the internet and watch glitch-free mobile video.

²¹ The 800 MHz band consists of spectrum with frequencies between 790 and 862 MHz.

- 2.22 We said that consumers expect these services should work on average at least 95% of the time, and we linked these user-facing definitions of coverage to technical definitions that can be used to measure coverage. This shows, for example, that 4G telephone call and data coverage requires a higher signal level than estimated in the past.²² In practice, this implies that a mobile operator is required to deliver a 4G signal strength of -105 dBm to achieve outdoor geographic mobile coverage in any given 100m² pixel of the UK's landmass.
- 2.23 We use a stronger signal strength to assess where indoor coverage is delivered, in recognition of the fact that it is more challenging for a mobile signal to penetrate through building walls and windows. For the premises obligation, we currently propose that a signal at least 10 dB higher than that needed to provide a good outdoor service is needed to ensure a good service indoors. We would expect those premises covered under the obligation to get the equivalent good coverage inside these premises and in their immediate surrounds.

²² We note that in some circumstances, particularly for more lightly loaded rural cells, 3G may also be able to deliver this Quality of Experience and we will address this when we engage stakeholders on our compliance methodology.

3. Our proposed coverage obligations

Introduction

- 3.1 In Section 2, we have explained that mobile coverage is not good enough. We also said that we have put particular weight on our duty to ensure the widespread availability of mobile services throughout the UK, noting that this needs to be balanced with our other relevant duties.
- 3.2 We consider it appropriate to include coverage obligations in some of the licenses we award in the 700 MHz auction.
- 3.3 In summary, we are proposing to have three coverage obligations:

One obligation focused on improved coverage of premises (and their immediate surrounds) in areas where there is currently no indoor coverage from any operator (the ‘premises obligation’):

An operator acquiring the licence carrying this obligation must provide new indoor coverage to 60% of those premises in rural areas that are unserved by any operator at the time of the award. As part of this obligation, we propose that at least 60% of premises without service in each Nation must receive a service.

Two coverage obligations focused on providing increased geographic coverage in rural areas (the ‘geographic obligations’):

Operators acquiring the licences carrying these obligations must provide good coverage across at least 92% of the total UK landmass. We expect this would equate to more than 90% of the rural landmass. As part of this obligation, we propose that a specific target for coverage in each Nation must be met. We describe and explain the geographic coverage targets for the Nations below.

- 3.4 We propose that these obligations must be met at levels of quality that provide consumers with the kind of experience they expect today, with reliable voice calls and a high probability of access to at least 2 Mbps (as we set out in Section 2). In practice, this implies that a mobile operator is required to deliver a 4G signal strength of – 105 dBm to achieve outdoor geographic coverage, and a 10 dB higher signal strength for the premises obligation (to provide a similar good experience indoors). We expect operators could meet these obligations by providing a mobile service at these quality levels from any frequency band.

We have a number of coverage-related objectives flowing from our duties

- 3.5 We have considered how, through the 700 MHz award, we can address the coverage problems set out in Section 2 in the way that would best meet our statutory duties.
- 3.6 Our main objective relating to coverage is to maximise consumers' benefit in terms of better mobile coverage. We want to achieve this by:
- a) **Focusing on rural areas:** Coverage is particularly bad in rural areas. Moreover, competition is highly unlikely to drive significant improvements in coverage in such areas. In light of our duty to have regard to the interests of people living in rural areas, one of our key priorities is to ensure the obligations improve rural coverage.
 - b) **Safeguarding benefits for the Nations:** In accordance with our duty to have regard to the interests of people in the different parts of the UK, we want to ensure that coverage benefits are spread throughout the UK's Nations.
 - c) **Delivering real benefits for consumers:** We want to frame the coverage obligations in a way which reflects how consumers use their mobile phones and what quality of service they expect. We also want these benefits to be delivered in a timely way and be as widely shared as possible.
 - d) **Allowing mobile operators appropriate flexibility:** We want to preserve appropriate flexibility for operators to develop their own deployment strategies, and use their expertise to pick the right solution for the right location.

We propose including three coverage obligations in the 700 MHz award

- 3.7 A coverage obligation will only deliver benefits if mobile operators choose to acquire the spectrum carrying that obligation. In principle, an operator will only acquire spectrum with a coverage obligation if its valuation of the spectrum, less the price it has to pay for the spectrum, is greater than the net cost of meeting the coverage obligation.²³ This means there is a risk of spectrum going unsold if the net cost of a coverage obligation exceeds the value of the spectrum associated with it. This would not be in the interests of citizens and consumers as it would delay the point at which operators deploy services in the spectrum.
- 3.8 The overall level of coverage that we can ensure through the coverage obligations is therefore necessarily constrained by the value (and amount) of the spectrum available in the auction. In practice, this means we have a choice between including multiple obligations with lower coverage requirements or fewer obligations with higher coverage requirements. As an illustration, we could in principle include either:
- a) a single obligation with a very high coverage requirement, such that an operator would be prepared to take it on only if it could acquire almost all of the available spectrum;

²³ In this context "net cost" factors in the commercial benefit of any new deployment.

- b) multiple obligations (e.g. two or three obligations) with a lower coverage requirement, such that an operator would be prepared to take on one of these obligations if it could acquire a significant share of the available spectrum; or
 - c) a higher number of obligations (e.g. four or more obligations) with a still lower coverage requirement, such that an operator would be prepared to take on one of these obligations even if it could only acquire a relatively small share of the available spectrum.
- 3.9 Whilst a single obligation would potentially allow us to set the highest coverage requirements, it would bind a single operator and therefore benefit only its customers. We do not think such a requirement would be likely to draw an equivalent competitive response from other operators.²⁴
- 3.10 Including multiple obligations with a lower coverage requirement would benefit consumers by increasing the prospect that customers of different mobile operators received new coverage, and still allow us to seek material coverage increases for consumers. It would also allow us to design obligations which focused on improving different kinds of coverage (e.g. outdoor as well as indoor coverage).
- 3.11 Based on the analysis we have undertaken (which we set out in more detail below), including four or more obligations with a still lower coverage requirement would be likely to result in us setting coverage requirements that failed to properly address consumers' needs.
- 3.12 We consider that imposing three obligations would strike an appropriate balance between the need to ensure significant coverage increases and the need to spread the benefits of better coverage across as many consumers as possible.

Consumers need better coverage both in the places they live and work and across wider geographic areas

- 3.13 The research we cited in Section 2 shows that consumers highly prize the 'always on' nature of mobile services, and expect to be able to access a good mobile service in the vast majority of locations, the vast majority of the time. This suggests that they value coverage both 'on the move' and where they live: both at home, and in their immediate community.
- 3.14 In meeting consumers' desire for wider area coverage, we consider that a geographic coverage target would meet these needs. At the same time it would allow operators flexibility to deploy in the areas they think are most appropriate to best meet consumer needs. Such flexibility would not be possible if we took a more specific, targeted approach.

²⁴ The nature of these obligation is quite different to that of the 4G obligation that we included in the 2013 4G auction. That obligation required deployment of 4G services to 98% of premises and we took the view that competition would lead at least some of the other operators to follow the extent of this rollout

- 3.15 We also consider that it is appropriate to prioritise premises, and in particular premises without coverage from any operator. We recognise that consumers value choice, and so any additional coverage for premises that currently have service from only one or two operators today would bring benefits. However, we think that consumers without any coverage are likely to experience the greatest harm and should be the primary beneficiaries of a premises focused obligation.
- 3.16 We recognise that there are a number of substitutes for in-home mobile coverage – e.g. using a landline to make calls or Wi-Fi to use data services. However, these are not always available. Consumers cannot always access Wi-Fi when they are visiting other people’s houses. Calls will often be made to mobile phone numbers even if a landline alternative is available. Moreover, as outlined in our 2017 *Connected Nations* report 17% of rural premises do not have a decent fixed broadband connection.²⁵ Even where a good service exists, many consumers choose not to subscribe to a fixed broadband service.
- 3.17 Consumers will therefore benefit if, taken together, our proposed obligations deliver improvements in both premises coverage and geographic coverage.

We propose having premises and geographic targets in separate obligations

- 3.18 In principle, we could include both geographic and premises targets as a combined obligation. However, in practice we believe that it is preferable to separate them out into different obligations.
- 3.19 Providing mobile coverage in buildings requires a higher level of outdoor signal than would otherwise be needed to provide good outdoor coverage. This is to ensure that the signal remains of a good quality once it has passed through building walls and windows. The engineering approach needed to deliver this level of signal to remote rural areas is different from that needed to deliver extensive geographic coverage.
- 3.20 There is therefore a potential tension between meeting an obligation focused on premises and their immediate surrounds and meeting a geographic obligation. Consequently, we consider that an operator would be able to achieve a higher level of headline coverage against either objective (premises coverage or geographic coverage) if it has the flexibility to adapt a build strategy around either the premises coverage obligation or the geographic coverage obligation. This will help maximise coverage from the 700 MHz award.

The potential benefits from a second geographic obligation appear greater than the potential benefits from a second premises obligation

- 3.21 In light of our proposal for three coverage obligations in the 700 MHz award, and our focus on geographic and premises coverage, we have considered whether to include: (i) two

²⁵ Ofcom 210, *Connected Nations*, 11 https://www.ofcom.org.uk/_data/assets/pdf_file/0024/108843/summary-report-connected-nations-2017.pdf

geographic obligations and one premises obligation; or (ii) two premises obligations and one geographic obligation.

- 3.22 We consider that that the option that best addresses consumer needs is to include a single premises obligation and two geographic obligations.
- 3.23 The premises obligation is principally designed to benefit those consumers that live in these premises. We anticipate that, over time, these consumers would switch to the mobile operator that delivers a service in that area. Therefore, we consider that one premises obligation will provide sufficient benefits for consumers.
- 3.24 However, we consider that multiple obligations would be appropriate to improve geographic coverage. This is because consumers value coverage over a wide area, but may not switch operator purely on this basis. Since we want as many consumers as possible to benefit from the new geographic coverage, we want to ensure that more than one operator expands their geographic coverage footprint to 92% of the UK (see also paragraphs 3.30-3.36). Our initial view is that without multiple coverage obligations there is significant uncertainty over whether competition between operators will drive operators without an obligation to increase their coverage to these levels.
- 3.25 Our proposal is therefore to have two geographic obligations alongside one premises obligation. These two geographic obligations need to be acquired by different operators to add value. However, as we explain in Section 4, we consider that a single operator should be allowed to acquire the premises obligation together with a geographic obligation, as part of our proposals for three obligations.

We have set the scale of these obligations to achieve the biggest benefits for consumers

- 3.26 In proposing coverage obligations we are placing particular importance on our duty to further consumers' interests by securing the wide availability of services throughout the UK.
- 3.27 As we have set out above, in principle, we can only expect an operator to acquire spectrum with a coverage obligation if its valuation of the spectrum, less the price it has to pay for the spectrum, is greater than the net cost of meeting the coverage obligation. This means there is a risk of spectrum going unsold if the net cost of a coverage obligation is too high.
- 3.28 Valuing spectrum as a regulator in advance of an award is inherently difficult and subject to considerable uncertainty. The ultimate outcome is dependent on each operator's willingness to pay at the time of the auction. This in turn rests on the operators' views on how they would deploy and use the spectrum.
- 3.29 Given these inherent uncertainties as to the value of spectrum in advance of the auction, we are not able to reach a definitive view on the likely value of the spectrum. However, in order to be able to take a view of whether our proposals might give rise to a risk of some of the 700 MHz spectrum going unsold, we have undertaken a high level analysis of the

results of recent auctions in other countries, to inform our assessment of whether our coverage obligation proposals are appropriate. As a result, and on a conservative basis, we consider that if the cost of meeting any one of the obligations were materially higher than £300m then there would be a risk of spectrum going unsold.²⁶ This could mean the wider benefit of 700 MHz spectrum to improve capacity and coverage for consumers across the UK would not be realised in a timely way. We have therefore developed our initial proposals for the number of obligations and the scale of each coverage obligation with an investment of this order of magnitude in mind.

We propose that the geographic coverage obligations should require 92% geographic coverage

- 3.30 We propose that the operators that acquire the geographic coverage obligations should be required to deliver 92% geographic coverage.
- 3.31 Based on information operators have shared with us, we believe that an average mobile operator is likely to cover around 80% of the UK's landmass by the end of 2018.²⁷ Expanding geographic coverage significantly beyond this would require operators to build further new base stations.
- 3.32 We recognise that there are a number of factors that can impact the cost of a mobile site, based on its location. Based on our analysis, we think it is reasonable to assume that a 20m high base station in a rural area typically costs in the region of £250k to build and £20-40k per annum to operate. We have undertaken a high-level modelling that suggests it would cost no more than £300m for an operator to increase geographic coverage to at least 89-90% by building 500-700 new base stations and operating them for 20 years.²⁸
- 3.33 However, there are a number of reasons why we consider that, given our objective to improve mobile coverage for consumers, 89-90% would be too conservative a target to set for the geographic coverage obligation:
- a) Firstly, Government is currently in the process of building more than 250 base stations to extend the Emergency Services' communication network, and these sites will be

²⁶ In coming to this high level view, we have taken account of outcomes from a number of auctions, including awards of lower frequency spectrum in France, Germany and Finland since 2015 (both relative and absolute UK equivalent values calculated in a similar way as in our statement on annual licence fees for 900 MHz and 1800 MHz spectrum, 24 September 2015) as well as to our assessment of the full market value of low frequency spectrum in that statement.

²⁷ We have formed this view based on our analysis of information provided to us by operators through formal and informal information request and from our discussion with operators.

²⁸ We have undertaken a high-level modelling exercise based on deploying wide area coverage sites in the vicinity of the A & B road network, as a proxy for where operators may wish to deploy, which suggests this is conservative estimate of the coverage this number of sites could deliver.

built in a way that would allow operators to use these sites in the future.²⁹ This could result in much lower capital costs to access coverage from these sites (in the order of tens of thousands of pounds, as opposed to hundreds of thousands). We believe a material proportion of these sites could be suitable for expanding geographic coverage. Therefore, the availability of these sites could significantly reduce the costs of expanding coverage;

- b) Secondly, it is reasonable to assume that these new sites will deliver some incremental benefits to operators and their customers, so the net cost of expanding coverage may be less than we have set out above;
- c) Thirdly, we believe that the operators' rollout is likely to continue beyond 2018 absent a coverage obligation. Even though we expect this rollout to be quite limited in terms of rural coverage, it suggests 80% is a conservative baseline from which to work;
- d) Finally, commercial sharing agreements may enable operators to expand coverage with lower net costs per operator than our conservative assumptions suggest.

3.34 In light of the above, we consider that these factors are likely to allow the operators to deliver at least a further 2-3% coverage within the indicative £300m envelope. We therefore think that 92% is an appropriate target.

3.35 Our modelled deployment suggest the population levels benefitting from this new coverage should compare favourably with previous public sector measures, such as the Mobile Infrastructure Programme.³⁰ We note that our results indicate that the number of additional sites required to provide coverage to the whole of UK landmass are likely to rise exponentially in the final few percent.

²⁹ The Government's Emergency Service Mobile Communications Programme (ESMCP) is delivering the new communication system to be used by the emergency services and other public safety users in the UK. As part of the provision of its 'Extended Area Service' the Home Office is currently planning to build more than 250 new mobile sites in rural areas. We will keep the availability of these sites to operators under review.

See: <https://www.gov.uk/government/publications/the-emergency-services-mobile-communications-programme/emergency-services-network>

³⁰ The UK government announced the Mobile Infrastructure Project (MIP) in 2011 as part of the National Infrastructure Plan. The project delivered 75 4G-enabled masts in what were previously unserved areas. For more information on the impact of MIP, please see the UK Government's Impact and Benefits report:

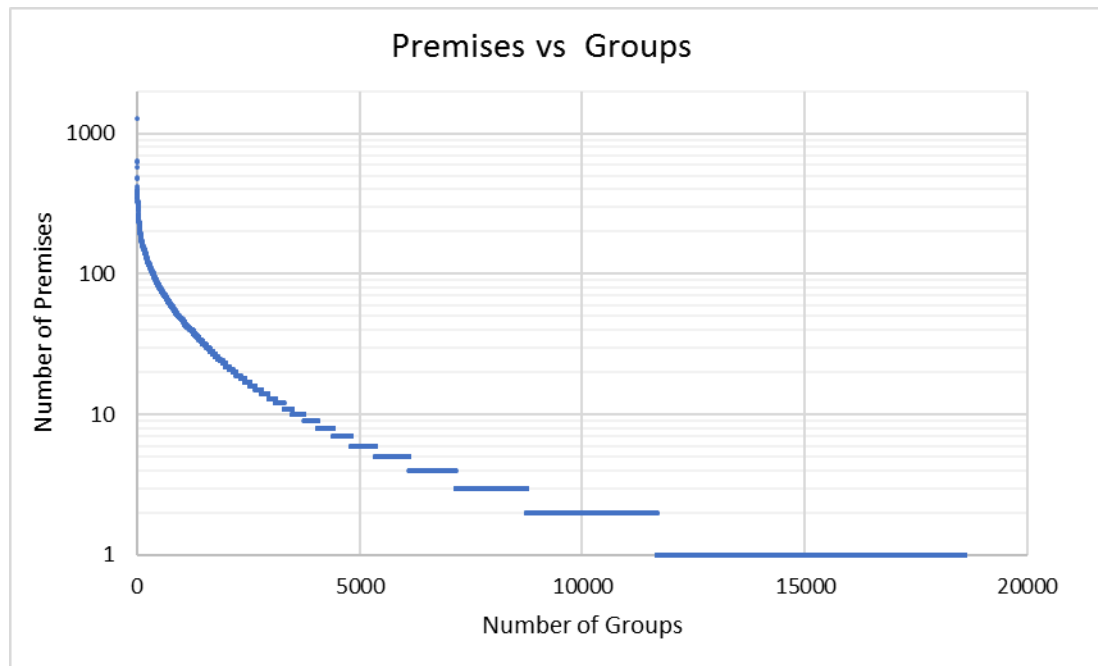
<https://www.gov.uk/government/publications/mobile-infrastructure-project-impact-and-benefits-report>.

We propose that the premises obligation must deliver coverage for 60% of unserved premises

- 3.36 We took a similar approach to develop our proposals on what would be an appropriate level to set the premises coverage obligation at. As we explain below, our initial analysis suggests that an investment of less than around £300m would enable an operator to provide good coverage inside and around 60% of the around 200,000 rural premises (residential and SME) which we expect to be unserved at the time of the award³¹. On this basis, our initial view is that 60% would be an appropriate level to set the premises target at, and to secure a good coverage experience in and around these premises (equivalent to a good outdoor experience as referred to in Section 2). A materially higher target would be unlikely to be proportionate and could undermine our ability to secure optimal use of spectrum.
- 3.37 We began by identifying the location of these premises, and working out how closely grouped together they are, to give a sense of the mix of likely coverage solutions that could be relevant. We identified c200,000 premises (homes and businesses) currently predicted to be without indoor coverage at the time of the award. Premises were then grouped together in clusters of 500m², 500m-2km², and 2km² +. We consider that these groupings represent a reasonable proxy for groups that might be addressed by different kinds of solutions (smaller, medium and macro sites). We consider that costs for installing and operating these solutions over 20 years could range from around £60k to £300k.
- 3.38 We then considered what could be achieved by focusing on the most “premises-heavy” groupings of premises. As can be seen in the Figure 3.1 below, there is a broad distribution of the density of premises across the different clusters. If an operator had to provide a solution for all premises, our analysis suggests this could cost up to £2bn. However, our analysis suggests that around 58% of premises can be found in just over 1200 groups, with each of these groups containing 40 or more premises.
- 3.39 Approximately half of these 1200 premises-heavy groups are in larger areas where a macrocell type deployment could be expected. Most others are in smaller areas and could be served by medium sized cells. Based on our cost estimates, this could be delivered for slightly under £300m.

³¹ Note that we have formed this view of the likely scale of the premises that will be without good coverage at the time of the award by analysing data provided to us by operators on their expected rollouts. We will keep the scale of this unserved area, and the proportionality of our target in relationship to it, under review before our next consultation.

Figure 3.1: Graphical Representation of the Different Sizes of Unserved Premises Groupings



- 3.40 In analysing the distribution of premises, we also noted that a small minority of the smaller areas clusters contained reasonable volumes of premises that could be addressed with lower cost solutions. On that basis, we considered that it would be possible for operators to extend coverage slightly beyond the 58% level set out above, and that therefore a target of 60% is appropriate. We consider that the appropriateness of this target is also supported by our observations above in paragraph 3.33 about the potential for operators to derive some benefits from this added coverage, and their own continuing rollout plans.
- 3.41 We consider that a target beyond 60% is not likely to be achievable as part of the coverage obligations that will be included in the 700MHz award, based on the use of outdoor network solutions. Because the great majority of clusters have very few premises in, it would be quite expensive to bring coverage to these areas (in terms of the cost per premise). We do not believe a higher target would be appropriate given the risks of unsold spectrum.
- 3.42 We note that there are a wide range of indoor based coverage solutions available, including femto cells, WiFi calling and smart repeaters, which can be deployed to improve in premises coverage, which operators might consider as a compliment to existing coverage in these locations. We remain open to innovative solutions for delivering coverage, and we recognise that in certain circumstances, for example where a premises has very thick walls, such solutions may play a useful part in delivering the quality of experience we want to provide. We also note that ongoing policy development towards a new Universal Service Obligation for broadband might play a role in increasing the number of circumstances where such solutions were effective. To be satisfied that any such

solution would meet consumers expectations we consider a number of tests would have to be met in order to qualify towards meeting the premises obligation:

- a) Involve no additional cost to consumers (i.e. many solutions require a reliable fixed broadband connection and Ofcom research suggests that, at this stage, we can't assume that a customer, particularly in a more rural area, will have access to, and take up, a connection to support these services);
- b) Such solutions would need to operate on an open, seamless basis (i.e. they could be accessed by people visiting a home for work or leisure, without the need for passcodes);
- c) Such solutions would need to be provided in areas where the operator providing them already has outdoor coverage.

3.43 In effect, we would seek to be satisfied that such solutions provided consumers with an equivalent quality experience to that provided by an outdoor network. If an operator wished to use indoor solutions such as femto cells to contribute to the premises target we would require them to seek prior approval from us. If evidence emerges during this consultation that indoor solutions can play a substantial role in delivering the indoor target, we will reassess whether we have set the premises target at the right level in our further consultation on 700 MHz auction design.

We also propose setting thresholds for coverage in the Nations

3.44 In light of our duty to have regard to the interest of people in different parts of the UK, we want to ensure that all the UK's Nations benefit from the coverage obligations. Our analysis suggests that operators tend to prioritise rolling out their networks in areas where population density, and passing footfall, is higher.³² England has a higher population density than the UK's other Nations. There is therefore a risk that, without specific thresholds for each Nation, the bulk of new coverage could be directed towards England. In order to mitigate this risk, we propose setting minimum coverage thresholds for our obligations in each of the UK Nations. There is precedent for this approach internationally, and we took a similar approach in setting Nations targets in our 2013 coverage obligation.

3.45 We propose to require the holder of the premises obligation to cover at least 60% of unserved rural premises in each of the Nations. This would ensure that each Nation benefits from the obligation to an equivalent degree.

3.46 For our geographic obligations, we are proposing that coverage requirements should be specific for each Nation. We set these out in Figure 3.2 below. The targets we are

³² Ofcom, 2017. *Economic Geography – An analysis of the determinants of 3G and 4G coverage in the UK.*
<https://www.ofcom.org.uk/research-and-data/multi-sector-research/availability-of-communication-services/economic-geography-2017>

proposing guarantee a larger coverage uplift for those Nations with the lowest geographic coverage today.

3.47 We do not consider that it would be appropriate to require operators to deliver 92% coverage in all of the Nations. As set out in Section 2, existing geographic coverage varies substantially between the Nations. In addition, expanding coverage in Scotland and Wales is much more challenging given their physical geography and the distribution of population settlements. Our analysis suggests that achieving the same level of coverage in Scotland and Wales as we are targeting for the UK overall would be likely to require several times the number of new sites we expect to be delivered under the coverage obligations that would be part of the 700MHz award as a whole. Requiring this scale of site-build would be highly likely to lead to spectrum being unsold in the auction. It would also involve spending significant amounts of money covering remote areas with lower footfall. The consumer benefit from this expenditure would be lower than coverage obligations focused on other areas.

3.48 We want to safeguard a larger coverage uplift for those Nations with the lowest geographic coverage today. We have therefore sought to apply a proportionate scale of improvement in the areas unserved that could guarantee that each Nation either achieves the level of coverage set for the UK as a whole (i.e. 92%), or receives coverage in at least one third of the areas that are currently uncovered. This will ensure greater coverage uplifts for those with larger coverage gaps today. Figure 3.2 below, sets out our proposed thresholds.

Figure 3.2: Coverage Required by Nations Safeguards Compared with Average Operator Coverage³³

	Thresholds set in each Nation (Good Geographic coverage)	Coverage from Average Operator (Good Geographic Coverage)
Scotland	At least 76%	64%
Wales	At least 83%	75%
Northern Ireland	At least 92%	87%
England	At least 92%	91%

3.49 In calibrating these levels of uplift our view has been informed by a preference not to fully allocate all the anticipated operator investment to these sub targets. We think it is

³³ Note that we have derived average operator coverage from information operators have provided to us about the coverage levels they expect to reach in 2018. In line with the approach set out in Section 2, we have taken good geographic coverage to mean 4G coverage at -105dBm or better. As we noted in Section 2, we will consider further the roll of 3G when we set out our compliance approach.

important we allow some headroom for operators to prioritise new sites in the areas that they consider will most benefit consumers. As a result, whilst England is not guaranteed a large uplift under these safeguards, it is likely that, for the reasons we set out above, a reasonable number of the sites not allocated through Nations safeguard will be deployed in England, and that England should therefore also get the benefit of a significant uplift. We also think this headroom is important because it means that individual operators with coverage that currently lags behind the average coverage level in a given Nation can still meet the individual Nation targets within the envelope of the overall investment level for the UK obligation.

Our proposed obligations should support improvements in road coverage

- 3.50 In our 2017 *Connected Nations* report we highlighted the relatively poor levels of coverage across the UK road and rail network. These coverage problems exist in part because stronger signals are required along these routes to penetrate into vehicles and trains.
- 3.51 In developing our proposals, we have considered how these might be addressed. We consider that our proposed geographic coverage obligations are likely to deliver significant improvements in road coverage across the UK. Around a third of the coverage gaps on major roads today consist of stretches of more than 1km without good coverage. We expect the holders of the geographic obligations would choose to target many of these areas as part of their efforts to meet the geographic obligations. There are a couple of reasons for this:
- a) consumer demand on and around these stretches of road is likely to be higher relative to other uncovered areas of the country;
 - b) the costs of deploying coverage in these areas may be lower than for more remote sites.
- 3.52 Therefore, we do not consider it is appropriate to include a specific target for roads in our coverage obligation. Indeed, doing so could prove counterproductive as it would limit operators' flexibility to decide where best to deploy new coverage on the basis of their understanding of local demand.

There is an extensive programme of work focussed directly on rail coverage

- 3.53 There is a significant amount of ongoing work that is focussed on improving mobile connectivity on trains. The UK Government has confirmed that passengers are to be offered free on-board Wi-Fi as part of future rail franchise requirements. The UK Government has also recently consulted on commercial options for further improving coverage on trains, and announced a £30m package to trial options for future interventions on the Trans-Pennine route in the 2017 budget. Ofcom is undertaking testing of mobile signals along rail lines, supported by Network Rail, to establish a clear view of

where trackside solutions should be targeted. We are also advising Government on likely spectrum options to support these further connectivity needs.

- 3.54 In light of this work, we do not propose including a rail coverage obligation in the 700 MHz award. We also think that it would be difficult to enforce an obligation on operators to deliver a step change in consumer experience on trains, when in practice this will depend on many other players, including Network Rail (to provide trackside access) and the Train Operating Companies (to allow access and equipment installation on carriages).

We propose a three year deadline

- 3.55 In order to maximise consumer benefits, we want the new coverage delivered by these obligations to be available as soon as practicably possible after completion of the 700 MHz auction. Although the 700 MHz band will not be available for use until May 2020, it should be feasible for operators to start planning their rollout shortly after the award has concluded.
- 3.56 We recognise that there are a range of challenges associated with deploying base stations in remote rural areas. For instance, identifying sites, securing power and backhaul connectivity and dealing with the planning process can be difficult.
- 3.57 Nevertheless, we are keen that consumers benefit from this new coverage as soon as is possible. We note that, in practice, the majority of sites delivered as part of recent rural coverage build programmes have been, or are planned to be, delivered within a circa three year timeframe. Although the Government's Mobile Infrastructure Project experienced significant delays, we understand that these were largely the result of co-ordination issues that should be avoidable in this case, and that once underway, many sites were delivered within around a 2-year window. We understand that many sites deployed to support Government's Emergency Service Mobile Communications Programme have been (or aim to be) delivered in a 2-3 year window.
- 3.58 In light of this, our provisional view is that it would be appropriate to require operators to comply with the coverage obligations within three years of the award completing.

We consider there will be benefits if licensees share information about new rural sites at an early stage

- 3.59 One feature of coverage obligations is that they only guarantee improved coverage for the customers of the operator acquiring the obligation. Sharing new mobile infrastructure can significantly reduce the costs of deployment, whilst also widening the benefits of new coverage to a wider set of customers. Whilst we are keen to see greater sharing, we are concerned that exploring sharing opportunities may not always be a priority for mobile operators as they focus on deployment.
- 3.60 Our initial view is that sharing information amongst the operators on the location of proposed new mast sites (on which 700 MHz is to be deployed) in rural areas some time

before this information becomes publicly available through the planning process, consistent with competition law, could deliver real benefits to consumers and secure wide availability of services in an effective way.

- 3.61 Specifically, we consider that it may be appropriate for this information to be made available to the other operators at least 30 days in advance of a planning notification or application, noting that this could be achieved utilising existing operator platforms for site information sharing. We are suggesting this time period because we are seeking to balance the benefits that earlier disclosure could bring for additional sharing with the risk that a requirement to share information at a very early stage could create a disproportionate administrative burden (i.e. lead to discussion of a number of sites that were not ultimately selected for delivery).
- 3.62 We expect that this earlier disclosure would provide more time for other operators to consider and discuss the benefits of shared deployment and engage in joint design, where this is commercially viable. We expect that in developing a process for this information exchange, operators might themselves want to form their own view of how much earlier than 30 days before a planning application information could be shared to maximise the potential benefits.

Our provisional assessment

- 3.63 Our provisional assessment is that the coverage obligations and our proposals concerning information about new cell sites are:
- a) **objectively justified** since many consumers still experience poor coverage, especially in rural areas and while on the move, and competition alone is unlikely to provide the level of coverage which is necessary to meet consumers' needs. We consider that the award of the 700 MHz band is an important opportunity to help improve coverage as, given its technical characteristics, the 700 MHz spectrum is well suited for improving mobile coverage;
 - b) **not unduly discriminatory** since all the operators will have the opportunity to bid for the lots carrying our proposed coverage obligations and the winners will be determined according to non-discriminatory selection criteria;
 - c) **proportionate** to what they are intended to achieve as our provisional view is that none of the proposed obligations would introduce any disproportionate regulatory burden on industry. We note, in particular, that we have carefully considered the constraint on the scope of any coverage obligation posed by the risk of the 700 MHz spectrum going unsold and the need to ensure that all operators would retain appropriate flexibility to develop their own deployment strategies; and
 - d) **transparent** in relation to what they are intended to achieve since the purpose of the proposed requirements is clear and their effect would be clear to the licensees on the face of the relevant licence conditions.

3.64 We will review our proposals and consider any changes necessary to our targets, in terms of the scale and/or number of obligations, in light of evidence presented by stakeholders in response to this consultation.

4. Initial views on how auction design may be relevant to our proposals

- 4.1 We plan to consult on the design of the 700 MHz award later this year. In that consultation we will set out how the auction design, including any proposals on competition and coverage, meet our relevant duties. However, in order to inform responses from stakeholders to our coverage proposals, we set out here early views on how our auction design can support our coverage objectives.

We expect to attach coverage obligations to the paired 700 MHz spectrum

- 4.2 The 700 MHz band comprises a total of 2x30 MHz of paired spectrum, together with 20 MHz of unpaired 700 MHz spectrum (which is referred to as Supplementary Downlink Spectrum, or SDL).
- 4.3 In the absence of any coverage obligations, we could divide the paired 700 MHz spectrum into six lots of 2x5 MHz; and the unpaired SDL spectrum into (up to) four lots of 5 MHz. Breaking the available spectrum down into small lot sizes would provide the maximum flexibility for operators to bid for spectrum rights that they value (e.g. if they want to win a holding of 2x15 MHz then they can bid for three 2x5 MHz lots, although the mechanics of how they can do this will depend on the specific auction design).
- 4.4 Such a design can be modified by attaching a coverage obligation to one or more lots – for example, a coverage obligation might be attached to one of the 2x5 MHz lots (meaning that the bidder that wins that lot will be awarded a spectrum licence that contains a coverage obligation). As an example, an operator that was interested in acquiring 2x10 MHz of paired 700 MHz spectrum could bid to acquire spectrum that includes both the 2x5 MHz coverage lot together with one of the other 2x5 MHz paired lots – or it could bid to acquire spectrum that includes two 2x5 MHz paired lots, neither of which have a coverage obligation attached.
- 4.5 If we included a high reserve price, then we may need to reduce the scale of the coverage obligations by a broadly equivalent amount, given that the scale of the obligations that we are proposing need to be proportionate to the potential value of the spectrum. In view of the particular weight that we are proposing to put on our duty to ensure widespread availability of mobile services, this consideration would point towards setting a low reserve price for the spectrum. Of course, there are other factors (relating to optimal use of spectrum and competition) that influence the choice of reserve price and we will therefore consider this point in more detail in the auction design consultation later this year.
- 4.6 In principle, it would be possible to attach coverage obligations to any of the 700 MHz spectrum. However, we consider that it be preferable to attach coverage obligations only

to the paired 700 MHz spectrum. The main reason for not attaching a coverage obligations to the unpaired, SDL spectrum is that there is significantly more uncertainty over its potential value.

We consider that three coverage obligations can be accommodated in the auction design

4.7 There are different ways to design an auction for three coverage obligations so as to maintain flexibility (as an aid to revealing the optimal allocation of spectrum) and mitigate the risk of spectrum going unsold. To illustrate the issues, the high-level packaging summarised below represents one way in which our different objectives could be balanced in the auction (see Figure 4.1):

- a) There are three lots of 2x5 MHz, each of which comes with a coverage obligation as described in Section 3 (two of which relate to the geographic coverage obligations, labelled G, and have to be won by different bidders – and the third of which relates to the premises obligation, labelled P); and
- b) There are three further lots of 2x5 MHz, labelled N, which have no coverage obligation (unencumbered spectrum lots).

Figure 4.1: Illustration of packaging paired 700 MHz spectrum for auction



Note: unpaired SDL spectrum lots are not shown for simplicity

We will take account of the need to manage aggregation risk when considering auction design

4.8 The reason for setting the size of the coverage lots to 2x5 MHz in the above illustration is to maintain flexibility in the potential ways in which spectrum can be allocated to different bidders through the auction. However, the size of the obligations might mean that at least some bidders would not want to bid for a 2x5 MHz coverage lot on its own. Instead, they might want to submit bids for a minimum number of lots including one of the unencumbered 2x5 MHz lots together with a 2x5 MHz coverage lot (making a total of 2x10 MHz with a coverage obligation). This exposure or aggregation risk could have implications for the choice of auction design since different auction formats and different detailed rules can be considered to mitigate or eliminate this risk. We will consider this when we consult on the auction design later in the year.

This approach should be consistent with our duty to promote competition

- 4.9 When auctioning spectrum we will consider whether there is a case to include competition measures such as spectrum caps in order to promote competition. This could for example lead us to include a cap on the overall amount of spectrum, and / or a cap on the amount of low frequency spectrum, that any operator can hold as a result of the auction.
- 4.10 Our approach to setting the scale of individual obligations is likely be compatible with a low frequency cap, should we decide that it is appropriate to include such a cap. This is because we do not think it likely at this stage that any low frequency cap that we might apply in the auction would prevent any bidder from acquiring at least 2x10 MHz of paired 700MHz spectrum. We will consult separately on spectrum caps later this year.

Allowing one operator to win both a geographic and premises obligation could also enable greater flexibility in potential auction outcomes

- 4.11 The proposal to include three coverage obligations reflects our objective to maximise coverage benefits. We have considered the extent to which having three obligations of this scale could reduce flexibility by making some outcomes impossible or highly unlikely, such as an operator being able to bid for paired 700 MHz spectrum that is unencumbered by coverage obligations, or acquire spectrum packages of different sizes.
- 4.12 We consider that it would be feasible to mitigate these risks by allowing one operator to win both a geographic and premises obligation for the reasons explained below.
- 4.13 If each coverage lot had to be won by a different bidder, and if none of the bidders were prepared to submit bids for a 2x5 MHz coverage lot on its own, then the auction might behave in very similar way that it would if we had attached coverage obligations to three separate blocks of 2x10 MHz each. This could reduce the range of potential auction outcomes in terms of the allocations of available spectrum between the winning bidders, including making it less likely that the winning combination of bids could include a bid for 700 MHz spectrum without a coverage obligation.
- 4.14 However, the range of potential outcomes would be increased if it were possible for one operator to win the premises obligation in combination with one of the geographic obligations. If so, this would increase the chances of the winning bids in the auction including an operator winning two of the coverage lots as part of a package of either 2x10 MHz or 2x15 MHz. This would open up the possibility of other bidders winning either 2x10 MHz or 2x5 MHz of unencumbered spectrum (in combination with the remaining coverage lot being won as part of a 2x10 MHz package).
- 4.15 One reason that the chances of this outcome might increase is that there is likely to be some synergy for an operator in delivering the geographic and premises obligations in combination. In other words, the cost to one operator of meeting both obligations may be less than the cost to separate operators of meeting each obligation in isolation. This means that the combination might deliver slightly less benefits overall (because there will be

some locations that would have got service from two operators that will now receive new coverage from only one operator). However, our initial view is that this approach could represent a sensible balance between the different auction objectives of maximising coverage (including securing coverage from a number of operators) and securing optimal use of spectrum.

- 4.16 Another factor that could increase flexibility in auction outcomes is that it is possible that some bidders may place a value on winning a 2x5 MHz coverage lot that is greater than the implicit cost of delivering the associated coverage obligation.³⁴ If so, then it is possible to have auction outcomes in which a bidder wins a coverage lot of 2x5 MHz on its own, or wins 2x10 MHz comprising both a geographic lot and the premises lot (with one of the other bidders winning spectrum containing only unencumbered lots if their valuation for unencumbered spectrum is high enough).

An auction mechanism could mitigate the risk of unsold spectrum

- 4.17 The coverage obligations that we are proposing are designed to be material, in light of the particular weight we are placing on improving mobile coverage. Consequently, there is a possibility that there is not sufficient demand for all the lots that would carry a coverage obligation to be sold, given inherent uncertainty around the commercial value of the spectrum and the costs of deploying new coverage. However, we think that the risk of a coverage lot going unsold can be mitigated as part of the auction design or through the specification of the obligations.
- 4.18 In reviewing our proposals, including the targets we are proposing in light of evidence presented by stakeholders, we will therefore consider how auction design can play a role in mitigating the risk of unsold spectrum.
- 4.19 One such auction mechanism is the inclusion of an opt-in round in which bidders would be asked to submit bids at the reserve price for a range of spectrum packages that include a coverage lot (or which include a combination of geographic and premises coverage lots). The intention would be to ensure that, if there is demand for the coverage lots at the reserve price, then they will be sold in the auction. If, on the other hand, there is insufficient demand in the opt-in round to sell all coverage lots at the reserve price, then the auction rules could be set so as to allow one of the geographic coverage lots to be converted into a 2x5 MHz lot without any coverage obligation attached (so that there would then be four 2x5 MHz lots of unencumbered, paired spectrum). The details of how this would work in practice depend on the spectrum packaging, auction format and other auction design considerations. We intend to discuss these matters later in the year when we consult on the auction design.

³⁴ Given the uncertainties involved and noting that the private value of spectrum to winning bidders in an auction will generally be above the market value that they pay to acquire the spectrum.

4.20 We have outlined above the way in which we consider we can maximise coverage whilst still leaving flexibility in the auction design to accommodate operators that wish to express a value for spectrum in different amounts including spectrum that is unencumbered with a coverage obligation. This is our preferred option. If we had significant concerns about the risk of a coverage lot going unsold in light of consultation responses and we considered that the auction design would not be the most appropriate way to address that risk, we could adjust either the scale of the obligations, or the number of obligations. If we had only two coverage obligations (one “geographic” and one “unserved premises”), then we think it would be appropriate to require that these obligations be won by different operators.³⁵

³⁵ Note that in these circumstances, given the priorities we identified in Section 3, we would propose to retain one geographic area and one premises coverage obligations.

5. Next steps

- 5.1 In this section we set out the next steps for stakeholders and Ofcom following this consultation.

The 700 MHz release timeline

- 5.2 We anticipate holding the 700 MHz auction in the second half of 2019, with the spectrum available for use in mid-2020.³⁶
- 5.3 We will publish a second consultation in the second half of 2018 setting out:
- a) our further proposals on the coverage obligations, in light of stakeholders' responses to this consultation;
 - b) our proposals on the design of the 700 MHz auction;
 - c) our draft competition assessment for the 700 MHz auction.
- 5.4 We intend to take final decisions on coverage obligations at the same time as final decisions on wider auction design, by spring 2019.

Compliance

- 5.5 We will also set out for stakeholders the criteria and methodology that we propose to impose for assessing compliance. We currently anticipate that we will use a combination of our own assessment tools, including drive testing, in addition to information provided by the operators.
- 5.6 Our aim is to base our view of compliance upon our view of good quality services, and expect an MNO meeting the obligation will be able to demonstrate that in practice there is a high degree of probability of this experience being met on the ground.
- 5.7 We are not in principle opposed to allowing coverage contributions to be delivered through roaming agreements with other operators. Our key test would be that this coverage is of a good quality.

Responding to this consultation

- 5.8 Views and comments on the issues raised in this document should be provided by **5pm on 4 May 2018**. Please see the Annexes for how to respond to this consultation, as well as our consultation questions and Ofcom's consultation principles.

³⁶ Ofcom, 2017, *700 MHz Clearance Timescale Review*.

https://www.ofcom.org.uk/data/assets/pdf_file/0022/106933/700mhz-clearance-timescale-review.pdf

A1. Responding to this consultation

How to respond

- A1.1 Ofcom would like to receive views and comments on the issues raised in this document, by 5pm on 4 May 2018.
- A1.2 You can download a response form from <https://www.ofcom.org.uk/consultations-and-statements/category-2/700-mhz-coverage-obligations>. You can return this by email or post to the address provided in the response form.
- A1.3 If your response is a large file, or has supporting charts, tables or other data, please email it to mobilecoverageconsultation2018@ofcom.org.uk, as an attachment in Microsoft Word format, together with the cover sheet (<https://www.ofcom.org.uk/consultations-and-statements/consultation-response-coversheet>). This email address is for this consultation only, and will not be valid after 1 June 2018.
- A1.4 Responses may alternatively be posted to the address below, marked with the title of the consultation:
- Jack Hindley
Ofcom
Riverside House
2A Southwark Bridge Road
London SE1 9HA
- A1.5 We welcome responses in formats other than print, for example an audio recording or a British Sign Language video. To respond in BSL:
- a) Send us a recording of you signing your response. This should be no longer than 5 minutes. Suitable file formats are DVDs, wmv or QuickTime files. Or
 - b) Upload a video of you signing your response directly to YouTube (or another hosting site) and send us the link.
- A1.6 We will publish a transcript of any audio or video responses we receive (unless your response is confidential)
- A1.7 We do not need a paper copy of your response as well as an electronic version. We will acknowledge receipt if your response is submitted via the online web form, but not otherwise.
- A1.8 You do not have to answer all the questions in the consultation if you do not have a view; a short response on just one point is fine. We also welcome joint responses.
- A1.9 It would be helpful if your response could include direct answers to the questions asked in the consultation document. The questions are listed at Annex 4. It would also help if you

could explain why you hold your views, and what you think the effect of Ofcom's proposals would be.

- A1.10 If you want to discuss the issues and questions raised in this consultation, please contact mobilecoverageconsultation2018@ofcom.org.uk.

Confidentiality

- A1.11 Consultations are more effective if we publish the responses before the consultation period closes. In particular, this can help people and organisations with limited resources or familiarity with the issues to respond in a more informed way. So, in the interests of transparency and good regulatory practice, and because we believe it is important that everyone who is interested in an issue can see other respondents' views, we usually publish all responses on our website, www.ofcom.org.uk, as soon as we receive them.
- A1.12 If you think your response should be kept confidential, please specify which part(s) this applies to, and explain why. Please send any confidential sections as a separate annex. If you want your name, address, other contact details or job title to remain confidential, please provide them only in the cover sheet, so that we don't have to edit your response.
- A1.13 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and try to respect it. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A1.14 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's intellectual property rights are explained further at <https://www.ofcom.org.uk/about-ofcom/website/terms-of-use>.
- A1.15 Following this consultation period, Ofcom plans to publish a statement in late 2018.

Ofcom's consultation processes

- A1.16 Ofcom aims to make responding to a consultation as easy as possible. For more information, please see our consultation principles in Annex x.
- A1.17 If you have any comments or suggestions on how we manage our consultations, please email us at consult@ofcom.org.uk. We particularly welcome ideas on how Ofcom could more effectively seek the views of groups or individuals, such as small businesses and residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.18 If you would like to discuss these issues, or Ofcom's consultation processes more generally, please contact Steve Gettings, Ofcom's consultation champion:

Steve Gettings
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA
Email: corporationsecretary@ofcom.org.uk

A2. Ofcom's consultation principles

Ofcom has seven principles that it follows for every public written consultation:

Before the consultation

- A2.1 Wherever possible, we will hold informal talks with people and organisations before announcing a big consultation, to find out whether we are thinking along the right lines. If we do not have enough time to do this, we will hold an open meeting to explain our proposals, shortly after announcing the consultation.

During the consultation

- A2.2 We will be clear about whom we are consulting, why, on what questions and for how long.
- A2.3 We will make the consultation document as short and simple as possible, with a summary of no more than two pages. We will try to make it as easy as possible for people to give us a written response. If the consultation is complicated, we may provide a short Plain English / Cymraeg Clir guide, to help smaller organisations or individuals who would not otherwise be able to spare the time to share their views.
- A2.4 We will consult for up to ten weeks, depending on the potential impact of our proposals.
- A2.5 A person within Ofcom will be in charge of making sure we follow our own guidelines and aim to reach the largest possible number of people and organisations who may be interested in the outcome of our decisions. Ofcom's Consultation Champion is the main person to contact if you have views on the way we run our consultations.
- A2.6 If we are not able to follow any of these seven principles, we will explain why.

After the consultation

- A2.7 We think it is important that everyone who is interested in an issue can see other people's views, so we usually publish all the responses on our website as soon as we receive them. After the consultation we will make our decisions and publish a statement explaining what we are going to do, and why, showing how respondents' views helped to shape these decisions.

A3. Consultation coversheet

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing

Name/contact details/job title

Whole response

Organisation

Part of the response

If there is no separate annex, which parts? _____

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name

Signed (if hard copy)

A4. Consultation questions

Q1: Do you agree with our proposal to include two geographic coverage obligations and a premises obligation in the 700MHz award?

Q2: Do you agree with our proposed target for geographic coverage?

Q3: Do you agree with our proposed target for in premises coverage?

Q4: Do you agree with our proposed approach to targets for the Nations?

Q5: Do you agree with our proposal that the coverage obligations should be met within 3 years of the 700MHz award?

Q6: Do you agree that sharing information on the location of new sites in rural areas in advance of submitting a planning notice would be appropriate?

Q7: Do you have any other comments?

A5. Legal framework

- A5.1 The legal framework which is relevant to setting coverage obligations in the licences for 700 MHz spectrum to be awarded by auction derives from our duties under both European and domestic legislation, specifically from:
- a) the Common Regulatory Framework³⁷ for electronic communications networks and services, in particular, the Framework Directive and the Authorisation Directive;
 - b) any relevant Decisions of the European Commission which bind the UK as to the use of the spectrum to be awarded; and
 - c) the Communications Act 2003 (the “2003 Act”) and the Wireless Telegraphy Act 2006 (the “WT Act”) which transpose the provisions of the directives referred to above into national law.

The European Regulatory Framework

The Framework Directive

- A5.2 Article 8 of the Framework Directive sets out the objectives which national regulatory authorities must take all reasonable steps to achieve. These include:
- a) the promotion of competition in the provision of electronic communications networks and services by, amongst other things, ensuring there is no distortion or restriction of competition in the electronic communications sector and encouraging efficient use and effective management of radio frequencies (Art. 8(2));
 - b) contributing to the development of the internal market by, amongst other things, removing obstacles to the provision of electronic communications networks and services at a European level, and encouraging the interoperability of pan-European services.
- A5.3 In pursuit of these policy objectives, Article 8 requires national regulatory authorities to apply objective, transparent, non-discriminatory and proportionate regulatory principles by, among others:
- a) ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing electronic communications networks and services;
 - b) safeguarding competition to the benefits of consumers and promoting, where appropriate, infrastructure-based competition;

³⁷ The Common Regulatory Framework comprises the Framework Directive (Directive 2002/21/EC), the Authorisation Directive (Directive 2002/20/EC), the Access Directive (Directive 2002/19/EC), the Universal Service Directive (Directive 2002/22/EC) and the Directive on privacy and electronic communications (Directive 2002/58/EC), as amended by the Better Regulation Directive (Directive 2009/140/EC).

- c) promoting efficient investment and innovation in new and enhanced infrastructures.
- A5.4 Article 8 also requires Member States to ensure that, in carrying out their regulatory tasks, national regulatory authorities take the utmost account of the desirability of making regulations technologically neutral.
- A5.5 Article 9 of the Framework Directive requires Member States to ensure the effective management of radio frequencies for electronic communications services in accordance with Article 8, and to ensure that spectrum allocation used for electronic communications services and issuing general authorisations or individual rights of use of such radio frequencies are based on objective, transparent, non-discriminatory and proportionate criteria. Article 9 also requires Member States to promote the harmonisation of use of radio frequencies across the Community, consistent with the need to ensure effective and efficient use of frequencies. It further requires Member States to ensure technology and service neutrality.

The Authorisation Directive

- A5.6 Article 5 of the Authorisation Directive provides that where it is necessary to grant individual rights of use of radio frequencies, Member States must grant such rights through open, objective, transparent, non-discriminatory and proportionate procedures, and in accordance with the provisions of Article 9 of the Framework Directive. When granting those rights, Member States are required to specify whether they can be transferred by the holder, and if so, under which conditions.
- A5.7 Article 7 of the Authorisation Directive provides that where Member States decide to limit the number of rights of use to be granted for radio frequencies, they must, among others, give due weight to the need to maximise benefits for users and to facilitate the development of competition.
- A5.8 The legal duties imposed on the UK by the Framework and Authorisation Directives are transposed into UK law and given effect to by the 2003 Act and the WT Act (see below).

European Commission decisions relevant to the 700 MHz spectrum

- A5.9 The 700 MHz spectrum is the upper part of the 470-790 MHz frequency band (the “**UHF band**”) which is currently used for terrestrial broadcasting and wireless audio PMSE use.
- A5.10 On 17 May 2017, the European Parliament and the Council adopted Decision 2017/899 (the “**2017 UHF Decision**”)³⁸, which requires Member States to repurpose the 700 MHz

³⁸ Decision (EU) 2017/899 of the European Parliament and of the Council of 17 May 2017 on the use of the 470-790 MHz frequency band in the Union; <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1515598100425&uri=CELEX:32017D0899>

frequency band from its current TV broadcasting and wireless audio PMSE use to new mobile broadband use by 30 June 2020. In doing so, Member States must apply the technical conditions laid down in the Commission implementing decision adopted on 28 April 2016 to harmonise the technical conditions of use and band plan for the 700 MHz band.³⁹

A5.11 Art. 3(1) of the 2017 UHF Decision provides that:

“When Member States authorise the use of or amend existing rights to use the 700 MHz frequency band, they shall take due account of the need to achieve the target speed and quality objectives set out in Article 6(1) of Decision No 243/2012/EU, including coverage in predetermined national priority areas where necessary, such as along major terrestrial transport paths, for the purpose of allowing wireless applications and European leadership in new digital services to contribute effectively to Union economic growth. Such measures may include conditions to facilitate or encourage the sharing of network infrastructure or spectrum in accordance with Union law.”⁴⁰

A5.12 The target speed and quality objectives set out in art. 6(1) of Decision No 243/2012/EU⁴¹, which Art. 3(1) of the 2017 UHF Decision refers to, include “achieving the target for all citizens to have access to broadband speeds of not less than 30 Mbps by 2020”. Recital 9 to the 2017 UHF Decision specifies that such target includes both indoors and outdoors coverage.

A5.13 In complying with Art. 3(2) of the 2017 UHF Decision, Member States are required to “assess the need to attach conditions to the rights of use for frequencies within the 700 MHz frequency band and, where appropriate, shall consult relevant stakeholders”.⁴²

UK national law

The Communications Act

A5.14 Ofcom’s principal duties under section 3 of the 2003 Act are:

- a) to further the interests of citizens in relation to communications matters; and
- b) to further the interests of consumers in relevant markets, where appropriate, by promoting competition.

A5.15 In doing so, we have a duty to secure, amongst other things, the optimal use of spectrum (WT Act, s. 3(2)(a)); the availability throughout the UK of a wide range of electronic

³⁹ Commission Implementing Decision (EU) 2016/687 of 28 April 2016 on the harmonisation of the 694-790 MHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services and for flexible national use in the Union; http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3A0J.L_.2016.118.01.0004.01.ENG

⁴⁰ See also Recital 9 of the 2017 UHF Decision.

⁴¹ Decision 243/2012/EU of the European Parliament and of the Council of 14 March 2012 establishing a multiannual radio spectrum policy programme: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32012D0243>

⁴² Art. 3(2) of the 2017 UHF Decision.

communications services and a duty to take account of the different needs and interests of all current or potential users of the frequencies (WT Act, s. 3(4)(f)).

- A5.16 In performing our duties, we are also required under section 3(3) of the 2003 Act to have regard in all cases to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed.
- A5.17 Section 4 of the 2003 Act requires Ofcom to act in accordance with the six Community requirements, which give effect to the requirements of Article 8 of the Framework Directive. In summary, the Community requirements are requirements:
- a) to promote competition in communications markets;
 - b) to ensure that Ofcom contributes to the development of the European internal market;
 - c) to promote the interests of all European Union citizens;
 - d) to act in a manner which, so far as practicable, is technology neutral;
 - e) to encourage, to the extent Ofcom considers it appropriate, the provision of network access and service interoperability for the purposes of securing efficiency and sustainable competition in communications markets and the maximum benefit for the customers of communications network and services providers; and
 - f) to encourage such compliance with certain international standards as is necessary for facilitating service interoperability and securing freedom of choice for the customers of communications providers.

The Wireless Telegraphy Act

Duties imposed by the WT Act

- A5.18 In carrying out our spectrum functions, we have a duty under section 3 of the WT Act to have regard in particular to: (i) the extent to which the spectrum is available for use or further use for wireless telegraphy, (ii) the demand for use of that spectrum for wireless telegraphy and (iii) the demand that is likely to arise in future for the use of that spectrum for wireless telegraphy.
- A5.19 We also have a duty to have regard, in particular, to the desirability of promoting: (i) the efficient management and use of the spectrum for wireless telegraphy, (ii) the economic and other benefits that may arise from the use of wireless telegraphy, (iii) the development of innovative services and (iv) competition in the provision of electronic communications services (WT Act, s. 3(2)).

Allocation of spectrum by auction

- A5.20 Ofcom may allocate spectrum by way of auctions (WT Act, s. 14). In making auction regulations, Ofcom must satisfy itself that the criteria for spectrum allocation are: (a)

objectively justifiable in relation to the frequencies to which they relate; (b) not such as to discriminate unduly against particular persons; (c) proportionate to what they are intended to achieve; and (d) in relation to what they are intended to achieve, transparent (WT Act, s.14(3B)).

- A5.21 The auction regulations may make provisions with respect to the grant of the relevant licences and also the terms, provisions and limitations subject to which such licences are granted (WT Act, s. 14(2) and s. 14(3)(h)).

Licence conditions

- A5.22 The terms, provisions and limitations of a licence for the use of spectrum for the provision of an electronic communications network or service must fall within Part B of the Annex to the Authorisation Directive (WT Act, s. 9(1A)). Part B of that Annex includes, among other things, a power to include conditions which set coverage and quality requirements, as well as conditions relating to the effective and efficient use of frequencies.
- A5.23 The terms, provisions and limitations of a spectrum licence must not duplicate the obligations already imposed on the licensee by the general conditions set by Ofcom under section 45 of the Communications Act (WT Act, s. 9(6)). Both the current general conditions and the revised general conditions that will come into force from 1 October 2018⁴³ do not include any of the obligations that we are proposing to attach to the 700 MHz licences.
- A5.24 Under section 9(7) of the WT Act, Ofcom may only impose terms, provisions and limitations which are:
- a) objectively justified in relation to the network and services to which they relate;
 - b) not unduly discriminatory;
 - c) proportionate to what they are intended to achieve; and
 - d) transparent in relation to what they are intended to achieve.
- A5.25 In paragraph 3.63, we have explained why we consider that the proposals set out in this document meet these legal tests.

Impact assessment

- A5.26 The analysis presented in this document constitutes an impact assessment as defined in section 7 of the 2003 Act.
- A5.27 Section 7 of the 2003 Act provides that where we are proposing to do anything for the purposes of or in connection with the carrying out of our functions, and it appears to us that the proposal is important, then we are required to carry out and publish an

⁴³ The general conditions of entitlement: <https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/general-authorisation-regime>

assessment of the likely impact of implementing the proposal, or a statement setting out our reasons for thinking that it is unnecessary to carry out such an assessment. Where we publish such an assessment, stakeholders must have an opportunity to make representations to us about the proposal to which the assessment relates.

- A5.28 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. As a matter of policy, Ofcom is committed to carrying out impact assessments in relation to the great majority of our policy decisions.⁴⁴

Equality impact assessment

- A5.29 Ofcom is required by statute to assess the potential impact of all our functions, policies, projects and practices on the following equality groups: age, disability, gender, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation.⁴⁵ We refer to groups of people with these protected characteristics as “equality groups”.
- A5.30 We fulfil these obligations by carrying out an Equality Impact Assessment (“EIA”), which examines the potential impact our proposed policy is likely to have on people, depending on their personal circumstances. EIAs also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers, regardless of their background and identity.
- A5.31 We have not considered it necessary to carry out separate EIAs in relation to our additional equality duties in Northern Ireland, regarding religious belief and political opinion. This is because we anticipate that our proposals will not have a differential impact on any equality group in Northern Ireland compared to consumers in general.
- A5.32 We consider that the proposals set out in this consultation document would have a positive impact on many consumers in the UK. Rural areas do not currently have the same availability and quality of mobile coverage as urban areas. Our proposals would principally benefit those living and working in rural areas, but also commuters and tourists in these regions.
- A5.33 There is no evidence of potential negative impacts on equality groups. In developing our proposals we have sought to address existing consumer harm in the mobile market (particularly in rural areas) on the basis that improving the availability of voice and data coverage will bring benefits to all consumers. We note that those consumers who are not the focus of our policy proposals (i.e. urban consumers) are very likely to already receive decent mobile coverage (and will benefit from improved coverage over a wider area as they travel around in the future).

⁴⁴ For further information about our approach to impact assessments, see Ofcom’s document “Better policy-making: Ofcom’s approach to impact assessment”, 21 July 2005:

https://www.ofcom.org.uk/data/assets/pdf_file/0026/57194/better_policy_making.pdf

⁴⁵ As defined in the Equality Act 2010.

A5.34 We consider that our proposals would have a positive impact for consumers in the UK, particularly people in rural areas. We do not believe that our proposals would have any detrimental impact on any of the relevant equality groups.