Three's response to Ofcom's proposals for coverage obligations in the award of the 700 MHz spectrum band

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Executive summary

Three welcomes the opportunity to respond to Ofcom's consultation on proposals for coverage obligations in the award of the 700 MHz spectrum band.

Both Ofcom and Government share an objective to expand the availability of mobile services across the UK:

- the 2017 Conservative Party manifesto included a pledge to extend mobile coverage to 95% of the UK geography by 2022 and to have the majority of the population covered by a 5G signal by 2027;
- Ofcom has a duty to ensure the widespread availability of mobile voice and data services throughout the UK, and is specifically aiming to deliver coverage enhancements in rural areas, both for customers on the move (i.e. over a wide area geographic area) and at home (through good quality indoor coverage).

Ofcom is proposing to meet these objectives by attaching the following coverage obligations to lots of paired 700 MHz spectrum that is due to be auctioned in 2019:

- 2x *geographic obligations*: requiring the licence holders to provide good quality voice and mobile data service across 92% of the UK landmass
- 1x *premises obligation*: requiring the licence holder to provide good quality inbuilding coverage to 60% of the 200,000 premises in rural areas that Ofcom predicts will lack good indoor coverage from any mobile operator at the time of the auction.

Three supports Ofcom and Government's aim to improve the availability of mobile services in rural areas. We agree that competition alone will not extend coverage significantly beyond current levels, because building new sites in areas of low population density is increasingly uneconomic.

However, Ofcom's approach would be a missed opportunity. The 700MHz auction will be the last chance to improve mobile coverage in many years. Ofcom's obligations do not deliver on the ambition to extend coverage to 95% of the UK geography by 2022.

Ofcom's solution is to have three separate, relatively unambitious, coverage obligations to ensure that multiple operators expand coverage to the desired levels, whilst also avoiding the risk of having unsold spectrum.

We believe it is possible to extend geographic coverage to 95% by making fuller use of the policy levers available to Ofcom. In our view, infrastructure sharing in rural areas must be part of the solution. Ofcom's objectives would be better served by attaching a more ambitious coverage obligation to a single, larger block (i.e. 95% geo coverage on a single 2x10MHz, or 2x15MHz or 2x10MHz plus 5MHz SDL lot), and requiring the license holder to provide wholesale roaming in specified rural areas. It is also possible to target 60% of the 200,000 premises in rural areas as part of the same requirement.

Attaching the obligation to a block larger than 2x5MHz reduces the risk that the value of that spectrum to an MNO may be less than the incremental cost of meeting the obligation. If the block size is large enough, the risk of unsold spectrum disappears and Ofcom can set itself a more ambitious target (e.g. 95%) as its coverage goal. Likewise,

the obligation to provide roaming in specified areas would reduce the cost to the industry of expanding coverage into unprofitable areas, and give MNOs unable to acquire the encumbered lot the option of availing themselves of roaming to provide 95% coverage to their consumers.

Moreover, Ofcom's proposed obligations are likely to lead to undesirable outcomes:

- They do not really solve the problem of unsold spectrum – Ofcom finds that if the cost of each obligation exceeds £300m, spectrum may go unsold. This is based on recent auction outcomes in comparable countries. But UK MNOs paid between £225m and c£300m for 2x5MHz of 800MHz spectrum in the UK's 2013 4G auction. Given uncertainty about the likely UK value of 700MHz, there is a significant risk that attaching the proposed obligations to small 2x5MHz lots may result in unsold spectrum;
- They steer the encumbered 700MHz lots towards MNOs with the largest planned coverage – as they would incur a lower cost to meet the obligations. In effect, they grant a public subsidy to extend coverage to two or three MNOs only;
- They will require the winners of the encumbered lots to build their own, infrastructure in remote rural areas, resulting in the costly and wasteful duplication of radio access networks in areas where there is scarcely enough traffic to justify to deployment of a single network. This will add to the overall cost of the industry when what is required is the sharing of common infrastructure in those areas.

As shown in the table below, Three's proposal provides a more effective mechanism for delivering on Government and Ofcom's coverage policy ambition while balancing Ofcom's duties around competition, efficiency and the widespread availability of mobile services.

	Ofcom Proposal		**Three Proposal**	
Specification	*2x 92% geographic coverage obligations* *1x rural premises obligation*		*1x 95% coverage (plus rural premises) and rural roaming obligation*	
Maximising coverage for UK customers	Coverage only expanded to 92% of landmass for customers of two (or three) MNOs, short of Government's ambition.	✗	Delivers 95% coverage to mobile customers	✓
Minimises risk of unsold spectrum	Material risk spectrum will be unsold if cost of meeting obligations is greater than value of spectrum	✗	Risk minimised by attaching obligations to larger block of spectrum	✓

Promoting competition	Distorts competition by providing 2 or 3 MNOs with a subsidy to expand coverage.	✗	Limits subsidy to only one MNO and provides route for all operators to compete for customers in rural areas	✓
Productive and allocative efficiency	Incentivises costly and wasteful duplication of network assets in areas of very low utilisation, diverting investment away from network upgrades customers value the most.	✗	Coverage is delivered in the hardest to reach areas at least cost, through the deployment of a single set of infrastructure. MNOs retain the resources and incentive to invest in those network upgrades that deliver greatest customer benefit.	✓

Contents.

1. Introduction

1.1. Mobile services are increasingly becoming an essential aspect of peoples' lives, with policy makers and customers now viewing mobile broadband as a "fourth utility". Expectations around the availability and quality of mobile coverage are also increasing with customers expecting to have access to good quality voice and data where they live, work and travel.

Not all customers are benefiting from improvements in the availability and quality of mobile coverage

1.2. Mobile coverage has improved substantially in recent years and all four MNOs now provide voice coverage across at least 90% of UK landmass. However, the availability of good quality mobile data services lags behind this, and many customers are still limited in their choice of mobile provider due to a lack of coverage by all four MNOs.

1.3. Most strikingly, at a time when MNOs are preparing for the commercial launch of 5G services, nearly a third of UK premises still do not have a full choice of mobile operator when it comes to the provision of 4G services. This means that a significant proportion of UK customers are not receiving the full benefits of retail competition.

1.4. As Ofcom recognises in its consultation, there is no longer a commercial justification for additional expansions in mobile coverage, due to the high cost of deploying infrastructure in remote locations and limited scope for recovering these costs due to very low levels of utilisation. Infrastructure-based competition in rural areas has taken mobile coverage as far as it can go.

1.5. Intervention by Ofcom and Government is required both to support further expansions in mobile coverage, and to ensure that the benefits of new technologies such as 4G and 5G accrue to all customers.

Coverage obligations alone will not ensure the widespread availability of mobile services

1.6. Meeting the 90% Geographic Voice Coverage Obligation was a costly and resource intensive exercise, more so for Three than any other operator due to our inferior site portfolio. Since signing the commitment on 17 December 2014, Three has invested [✂] in rollout to increase geographic coverage. Ofcom itself estimates that the cost of meeting its proposed coverage obligations on the 700MHz spectrum could be [✂].

1.7. This has a number of important implications. Firstly, it is clear that Ofcom's obligations will incentivise the costly and wasteful duplication of radio access networks in areas where there is scarcely enough traffic to justify to deployment of a single network. This will inevitably divert investment and resource away from network upgrades that customer value the most.

1.8. Secondly, the high cost of delivering the obligations gives rise to the risk that encumbered spectrum may go unsold. As a consequence, Ofcom is limited both in the scale of obligations it has proposed and in including only three rather than four obligations. In practice this means that Ofcom's proposals:

i. fail to meet government's ambition of 95% geographic coverage

ii. only deliver a coverage expansion benefit to the customers of at most three (and possibly only two) of the four MNOs.

iii. fails to promote competition by providing rural customers with a greater choice of mobile operators.

A single coverage obligation paired with a rural roaming obligation is the most effective mechanism for balancing Ofcom's objectives

1.9. Ofcom and Government must consider an alternative approach to delivering its coverage objectives, that addresses the underlying reason why MNOs are not expanding rural coverage i.e. that it is simply too costly for multiple MNOs to deploy their own RANs in rural areas.

1.10. A single obligation to provide both 95% coverage, combined with an obligation to provide wholesale roaming access in rural can ensure the necessary infrastructure is deployed to meet Ofcom and Government's coverage ambition at least cost, while providing a mechanism for all MNOs to provide rural coverage to their customers. In doing so the benefits of increased competition and improved coverage can be delivered to all mobile customers.

1.11. In the next section, we set out what these obligations might look like, and in the following section we show why these are the best way of balancing Ofcom's policy objectives.

2. Specification of coverage and rural roaming obligations

2.1. In this section, we provide a high-level specification of the package of coverage and rural roaming obligations that will most effectively deliver Ofcom and Government's policy ambitions.

The coverage obligation will require the licence holder to expand its coverage to 95%

2.2. In order to meet Government's ambition of 95% geographic coverage, the licence holder would be required to provide good quality voice and data coverage across 95% of the UK landmass. Ofcom may wish to also include binding sub-targets for each of the four Nations to ensure expansions in coverage are delivered more evenly across the UK.

2.3. We consider that the resulting expansion in geographic coverage would also deliver an increase the number of covered rural premises. However, we recognise higher signal strengths may be required to deliver good quality indoor coverage compared to outdoor coverage. Ofcom could therefore decide to include a binding-sub target for the coverage of a proportion of rural indoor not-spots in order to address this specific policy concern.

2.4. Given, that the same underlying sites and spectrum assets will need to be deployed to meet both the geographic and rural premises targets, we do not consider this will impose an undue additional burden on the licence holder. Indeed, Ofcom itself notes in the consultation that "there is likely to be some synergy for an operator in delivering the geographic and premises obligations in combination".

The roaming obligation will require the licence holder to provide wholesale roaming access in rural areas

2.5. The licence holder would also be required to provide wholesale voice and data roaming access to other MNOs in a defined set of rural areas where the 700 MHz is deployed, at rate regulated at long-run incremental cost.[1]

2.6. As set out in Table 1, this would be a much more targeted obligation than the national voice roaming obligation considered by Government in 2014. As such the concerns previously raised by industry stakeholders in relation to the 2014 obligation are either not applicable or mitigated by the very targeted nature of this obligation.

Table 1 Comparison with a National Roaming Obligation

Design Feature	National Roaming Obligation	Rural Roaming Obligation	Relevance of concerns raised in relation to national roaming
Service scope	Voice only	Voice and data	No loss of data services from signal lock as obligation is to provide both voice and data roaming.

[1] Technically this could be implemented at a Tracking Area List (TAL) level, such that the licence holder is required to provide roaming access across those TALs in rural areas, in which it has deployed 700 MHz.

Design Feature	National Roaming Obligation	Rural Roaming Obligation	Relevance of concerns raised in relation to national roaming
Geographic scope	Nationwide	Targeted to specific rural areas.	Any adverse impacts on battery life and dropped calls restricted to specific geographic areas (not nationwide). Obligation is limited to areas where there are insufficient incentives for network-based competition, so would not displace MNOs own investment in these locations. MNOs' incentives to invest in their own network infrastructure will preserved throughout the majority of the UK.
Technical scope	Any-to-any operator roaming	One-way bilateral roaming with other MNOs	Handover of service, for a given customer, only occurs between two operators so any adverse impacts on battery life and dropped calls are minimised. Operational complexity is greatly reduced.
Wholesale roaming charge	Rate based on fully allocated cost of providing roaming services	Rate regulated at long-run incremental cost	Any adverse competition impacts on new/entrants or MNOs with smaller spectrum and/or site portfolios are minimised due to pricing at LRIC.

The obligations preserve MNOs' incentives to invest

2.7. A key advantage of the obligations proposed here, compared to the 2014 National roaming proposal, is that they do not damage incentives to invest in network upgrades, either for the host MNO providing roaming services or the other MNOs using roaming:

- ***MNOs using roaming services:*** there is little prospect that the availability of roaming access would displace MNOs own investment in coverage enhancements because the obligation would only apply in rural areas. As Ofcom itself acknowledges, the commercial case for expanding coverage in these areas is weak and, as a result, competition is unlikely to drive operators to deploy their own RAN infrastructure. Throughout the rest of the UK, MNOs would continue to have the ability and incentive to invest in upgrades to differentiate their service offering and compete on the quality of their networks.

- ***The MNO providing roaming services:*** the licence holder of the encumbered spectrum itself will also remain strongly incentivised to invest in new sites because it is required to do so to meet the accompanying 95% coverage obligation. Beyond this, the ability to recover additional revenue from the delivery of wholesale roaming services, may provide a commercial justification for incremental network expansions which are unprofitable on a standalone basis.

2.8. However, it is possible to build in additional safeguards, to the extent that Ofcom is concerned around any potential adverse impact on MNOs' investment incentives. One possible mechanism is a cap on each MNOs volume of roaming traffic. This could be expressed a proportion of the total traffic on the access-seeking MNO's own network.

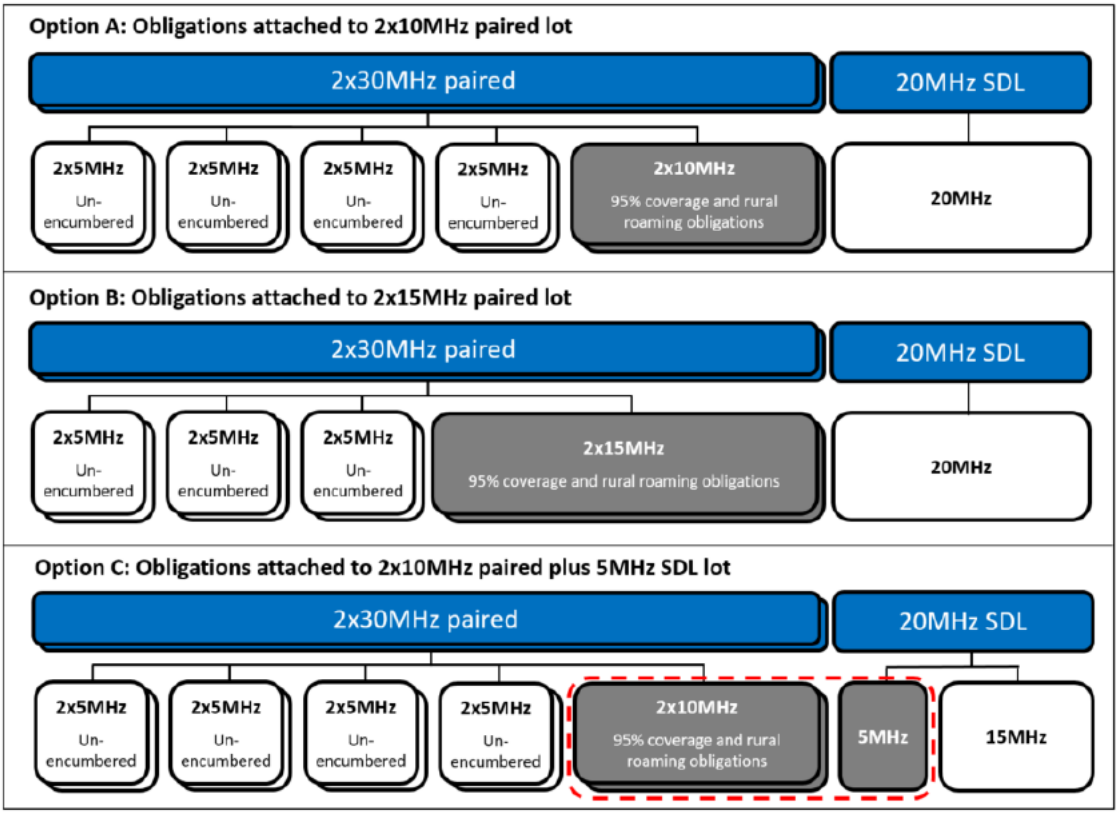
2.9. Roaming volumes above the cap could be charged at a higher rate, to disincentivise excessive roaming usage. In the event of persistent excessive roaming volumes, access could ultimately be revoked in the relevant group of TALs.

2.10. Such a mechanism would ensure that access-seeking MNOs cannot use roaming as an alternative to building out their own networks in areas where there are in fact sufficient traffic volumes to justify the investment.

The obligations can be easily incorporated into Ofcom's auction design

2.11. While Ofcom is yet to consult on its auction design, we note that the 95% coverage and roaming obligations can be incorporated in a similar way to Ofcom's proposed coverage obligations, as illustrated Figure 1 in below.

Figure 1: Options to incorporate obligations into Ofcom's auction design



2.12. Given the greater scale of the coverage obligation (compared to Ofcom's proposed obligations) and the requirement to provide rural roaming access, we consider it may be necessary to attach the obligations to a 2x10MHz block of paired spectrum (i.e Option A). This would ensure bidders have enough capacity to deliver the obligations while leaving as much spectrum as possible unencumbered and fully contestable in the auction. Bidders would retain the flexibility to bid for packages that include the 2x10MHz lot plus additional unencumbered spectrum, subject to any competition measures Ofcom introduces (such as total or low frequency spectrum caps).

2.13. To the extent that Ofcom is concerned that a 2x10MHz block does not provide potential bidders with sufficient capacity to deliver the obligations, then the encumbered lot can

either be increased to 2x15MHz of paired spectrum (Option B) or could be augmented with 5 MHz of the unpaired SDL spectrum (Option C). This would provide additional capacity and downlink speed performance to mitigate any adverse impact the roaming traffic may have on the quality of service the host MNO can deliver to its own customers.

3. Coverage and rural roaming obligations are a more effective way to meet Ofcom's objectives

3.1. In addition to its specific policy objectives around expanding rural coverage, Ofcom has a number of legal duties in considering what license conditions to attach to the 700 MHz spectrum Ofcom. These include:

- securing the optimal use of spectrum
- ensuring the widespread availability of mobile voice and data services
- promoting competition in telecoms markets
- encouraging investment and innovation; and
- furthering the interests of consumers in respect of choice, price, quality of service and value for money

3.2. In this section, we show that a 95% coverage obligation combined with a rural roaming obligation best balances these duties with Ofcom and Government's policy objectives.

95% coverage and rural roaming obligations deliver the greatest coverage benefits to customers

3.3. Ofcom states in its consultation that it has "put particular weight on our duty to ensure the widespread availability of mobile services throughout the UK". However, Ofcom's proposed coverage obligations would only guarantee modest coverage expansions from the 2 or 3 MNOs which acquire the encumbered lots.

3.4. Furthermore, as Ofcom itself acknowledges it its consultation, the cost of deploying and operating infrastructure in rural areas means competition is highly unlikely to elicit a competitive response from other MNOs. The benefits of enhanced coverage would only accrue to a subset of mobile customers.

3.5. This is fundamentally at odds with Ofcom's statement that its "main objective relating to coverage is to maximise consumers' benefit in terms of better mobile coverage." Moreover, Government has made a pledge to extend mobile coverage to 95% of the UK geography by 2022. Ofcom's 92% geographic coverage obligations fall decidedly short of this ambition.

3.6. A rural coverage and roaming obligation can provide both a greater increment in geographic coverage, to deliver on Governments' ambition of 95%, and cost effective route for all operators to deliver an expansion in mobile coverage.

3.7. This is because wholesale roaming access would allow MNOs to provide coverage to their customers in rural areas while only incurring the incremental cost of their own customers' usage (rather than the total cost of deploying and operating a site which would otherwise experience only very low levels of utilisation). Competition between operators will ensure that MNOs are strongly incentivised to avail themselves of rural roaming access. In particular, the obligation on the host MNO to expand its voice and data coverage from c.80% to 95% will elicit a response from other MNOs wishing to close the gap in their relative coverage positions.

95% coverage and rural roaming obligations safeguard the optimal use of spectrum

3.8. Ofcom has a statutory duty to secure the optimal use of spectrum. This requires that mobile spectrum is made available to MNOs in a timely way, to ensure its benefits to customers are delivered as soon as possible.

3.9. However, there is a material risk with Ofcom's proposed obligations, that spectrum may go unsold due to the cost of meeting them exceeding MNOs' valuations of the spectrum to which they are attached.

3.10. In its consultation, Ofcom states that there would be a risk of spectrum going unsold of any of its obligations cost more that £300m to deliver[2]. However, Ofcom also estimates that it will cost the "average MNO" up to £300m to expand their coverage to 89 - 90%. We note that this is 2-3 percentage points short of Ofcom's proposed obligations and that UK MNOs paid between £225m-c£300m for 2x5MHz of 800MHz spectrum in the UK's 2013 4G auction.

3.11. This gives rise to a material risk that lots of the 700MHz spectrum will go unsold if either:

I. MNOs have similar valuations for the 700MHz spectrum as they did for the 800MHz; or

II. Ofcom has even marginally underestimated the cost of meeting the obligation.

Unsold spectrum at the 700MHz award, would delay the roll-out of capacity and coverage benefits to customers and undermine Ofcom's duty to secure the optimal use of spectrum.

3.12. The 95% coverage and rural roaming obligations proposed by Three, minimise this risk by attaching the obligations to a larger block of spectrum than the 2x5MHz lot that Ofcom has proposed (either 2x10MHz, 2x15MHz or 2x10MHz plus 5MHz of SDL). In doing so Ofcom is free to set a more ambitious obligation than the 92% it is currently proposing.

3.13. We note that our proposal is better than attaching a single 95% obligation to a 2x10MHz lot without a roaming obligation. This is because doing so would encumber more spectrum, without providing a cost-effective route for the MNOs which do not acquire the encumbered lot to deliver enhanced rural coverage to their own customers.

3.14. To illustrate these points, Figure 2 below, provide a stylised depiction the trade-off Ofcom faces in setting coverage obligations. In determining both the scale of coverage obligation(s) and how many to attach, Ofcom must balance the risk that spectrum goes unsold (because the obligations are too costly for MNOs to meet) against the maximum benefit it can deliver to customers.

3.15. The blue line provides a stylised mapping of optimal coverage obligation packages. Packages above this line incur too high a risk that spectrum will go unsold. Packages below the line fail to deliver the greatest customer benefit; either the obligation(s) could be made more challenging or additional obligations could be added, for an acceptable level of risk.

3.16. Point A on the line represents a single 95% coverage obligation. This delivers the greatest expansion in coverage, but the increased cost to an MNO of meeting this obligation means only one licence can be encumbered to avoid the risk of unsold spectrum. As a consequence, fewer customers benefit from the coverage enhancement.

3.17. Point C on the line represents four coverage obligations. While all customers benefit from a coverage enhancement, Ofcom is contained in the ambition of the obligation due

[2] Based on its analysis of the outcomes of low-frequency auctions in other jurisdic ions,

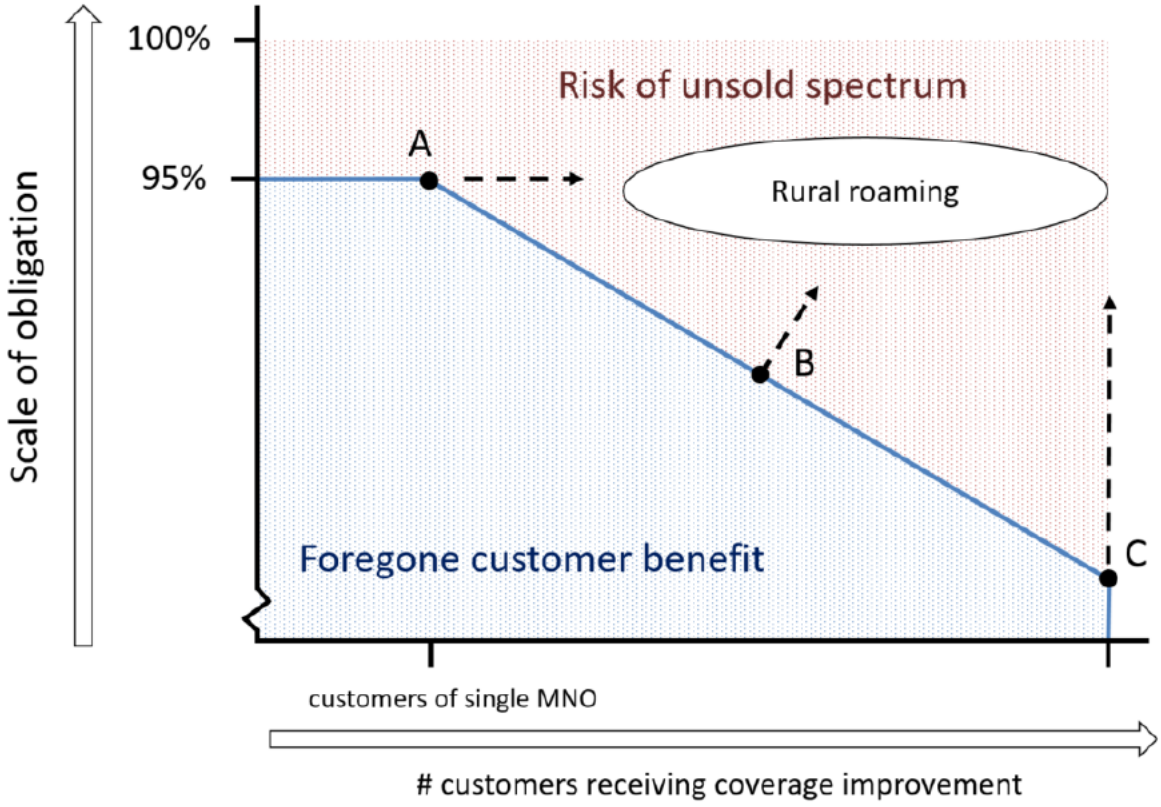
to the need ensure all four MNOs can meet the obligation at a cost lower than their valuation of spectrum to which it is attached. As a consequence, only a very incremental expansion in MNOs' coverage footprints is delivered.

3.18. Point B on the line represents an intermediate package, in which two or three lots of spectrum are encumbered with obligations which require a moderate expansion in coverage.

3.19. A 95% coverage obligation combined with a rural roaming obligation dominates all these packages, provided at least one MNO can deliver the obligations at a cost less than its valuation of the spectrum.

3.20. The 95% coverage obligation delivers a large increment in coverage, and the rural roaming obligation provides the potential for the benefits to accrue to more customers than just the MNO that acquires the license (i.e by providing cost-effective mechanism for other MNOs to deliver a service to rural customers). As such the level of benefit that can be delivered to customers is not constrained by the cost that MNOs would have to incur to provide the coverage enhancement unilaterally.

Figure 2 Policy trade-offs in the setting of mobile coverage obligations



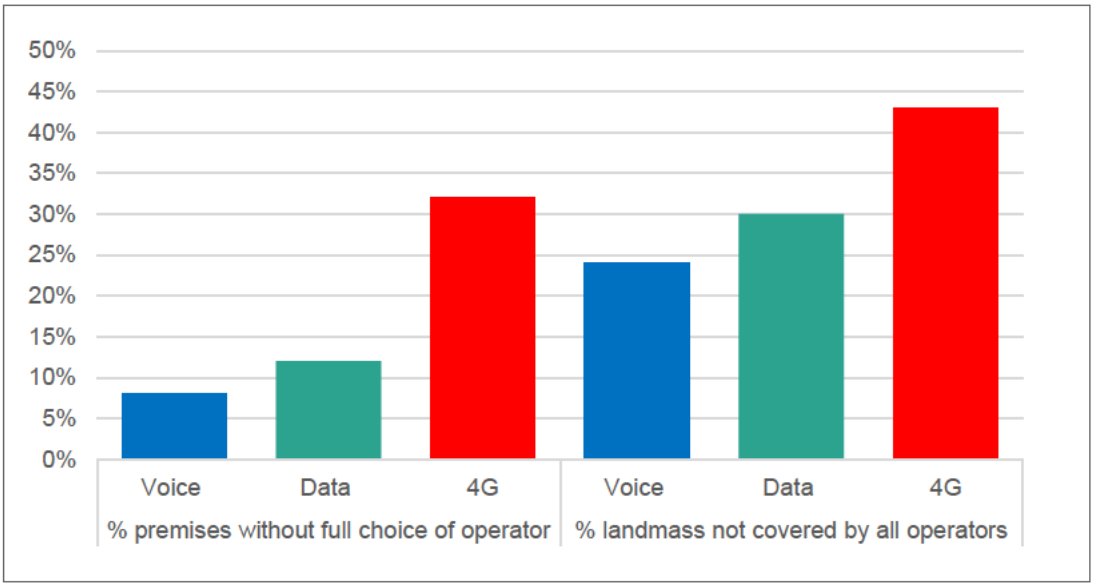
95% coverage and rural roaming obligations promote competition in mobile services

3.21. Ofcom has a duty to promote competition in the supply of mobile services and to have regard to the interests of consumers in respect of choice, price, quality of service and value for money.

3.22. However, as shown in Figure 3 below, a significant proportion of UK customers are restricted in their choice of mobile provider. In particular, 10% of households are restricted in their choice of provider in relation to mobile data services, because they are not covered

by one or more MNOs. In relation to 4G services, nearly a third of households are restricted in their choice of operator. This means that a significant proportion of customers are not receiving the full benefits of competition.

Figure 3: Availability of mobile coverage from all operators, by service



Source: Ofcom Connected Nations Update, April 2018.

3.23. Ofcom's proposed obligations, in only requiring two or three MNOs to expand their coverage, do not address this gap in competition, and in fact may even serve to reinforce it, by steering the encumbered lot towards those MNOs which already have the greatest coverage footprints (or were already planning to expand their site portfolio).

3.24. This is because an MNO's ability to deliver a high quality mobile data service to customers, both indoors and over a wide geographic area, is determined by two key factors: (i) their holdings of low frequency spectrum; and (ii) the size of their macro site portfolio:

- Vodafone and O2 have substantially larger low-frequency spectrum holdings than Three and a larger site portfolio (the target Beacon grid which Vodafone an O2 share contains c.18k sites[3], whereas Three currently has a portfolio of [✂] sites).
- EE currently has 18,500 sites[4] and has announced its ambition to provide 4G coverage across 95% of the UK by 2020[5]. It is also required to build up to 500 sites over the next few years to deliver the Emergency Services Network (ESN) contract.[6]

3.25. Vodafone, O2 and EE will therefore all be able to meet Ofcom's proposed coverage obligations at lower incremental cost than Three. This will be reflected in their respective valuations of the encumbered lots of spectrum in the 700MHz auction. In particular, these MNOs will discount the encumbered lots, to account for the cost of meeting the obligation, by less than Three.

3.26. This is not merely a theoretical concern. The inclusion of a coverage obligation in the 800MHZ and 2.6GHz combined award of spectrum in 2014 led to exactly this type of behaviour in practice.

[3] Financial Impact of ECC Changes, Analysys Mason report for DCMS, May 2015
[4] BT 2017 Annual Report
[5] For example, see https://ee.co.uk/why-ee/4g-coverage
[6] See http://newsroom.ee.co.uk/ee-selected-to-deliver-critical-new-4g-voice-and-data-network-for-britains-emergency-services/

3.27. The 2014 auction included up to 2x5MHz lots of unencumbered 800MHz spectrum and one lot of 2x10MHz spectrum unencumbered with a mobile data population coverage obligation. It is possible to calculate the amount by which each MNO discounted the encumbered spectrum by comparing the bids they submitted in the supplementary round for pairs of spectrum packages which were otherwise identical except that they contained:

- 2 lots of 2x5MHz of unencumbered 800MHz (known as lot category A1); versus
- 1 lot of 2x10MHz of 800MHz encumbered by the coverage obligation (lot category A2).

The implied discounts reflect each MNOs' cost of delivering the obligation.

3.28. O2 and Vodafone, with their superior spectrum holdings and site portfolios discounted the encumbered lots by the least. Vodafone's average discount for the encumbered spectrum was less than 1% of the total bid value for packages containing the equivalent amount of unencumbered 800MHz. O2 did not discount the encumbered spectrum at all, and eventually won the encumbered lot.

3.29. The inclusion of the coverage obligation in the 800MHz and 2.6GHz award therefore undoubtedly influenced the outcome of the auction by allocating the encumbered spectrum to the MNO which had the lowest cost of the meeting it.

3.30. A similar outcome can be expected in the 700MHz auction whereby the MNOs with the greatest existing coverage footprints are those mostly likely to win the encumbered lots, and consequently deliver further coverage expansion to their customers. This is likely to increase, rather than decrease the number of areas in which customers do not have a full choice of mobile provider.

3.31. A 95% coverage obligation paired with a rural roaming obligation would, in contrast, promote competition in rural areas by providing a cost-effective mechanism for operators (either MNOs directly or MVNOs via their host MNO) to compete for customers where it is not profitable to provide coverage on a unilateral basis. This should result in an intensification of competition at the retail level, allowing customers in rural areas to benefit from an unrestricted choice of mobile operator.

95% coverage and rural roaming obligations promote the efficient use of resources, delivering coverage expansions at least cost

3.32. Ofcom's proposed coverage obligations fail to deliver its rural coverage policy outcomes at least cost. This is because they require each MNO that wins encumbered spectrum to deploy its own radio access networks in rural areas. This is a wasteful and unnecessary duplication of assets given the very low levels of utilisation in these areas.

3.33. By way of illustration, the quietest sites in Three's RAN network incur similar operating costs to our urban sites, but carry an average of [✂] calls per month and [✂] minutes of voice traffic (compared to [✂] calls per month on urban sites).

3.34. Coverage obligations requiring MNOs to duplicate network assets in such locations are unquestionably inefficient, diverting investment away from network upgrades which deliver the greatest customer benefit. In contrast, a 95% coverage obligation paired with a rural roaming obligation would allow all MNOs to provide coverage in these areas at least cost, with the deployment of a single network infrastructure in these areas.