



Implementing the broadband Universal Service Obligation

BT's Response to Ofcom's request for expressions of interest in serving as
Universal Service Provider for broadband

4 September 2018 (updated January 2019)

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Executive summary

We fully support the objective of getting decent broadband to the vast majority

1. The Government has set out an ambitious objective to give everyone in the UK a legal right to a decent broadband connection by 2020, up to a reasonable cost threshold. We fully support this objective, and in this document set out how we believe it can best be delivered (please note all proposals are currently subject to internal BT Group and Openreach Capex governance approval, which we are progressing and expect to be completed by the end of October).

2. In summary, a combination of fixed wireless access services and a proactive, targeted extension of fixed networks is the best way to provide a universal broadband solution to the vast majority of the 600k premises that will not have access by 2020. This will also enable delivery on the fastest possible timescales.

Fixed wireless to 450k of the 600k premises without decent fixed line services

3. We are confident that our fixed wireless access technology comfortably exceeds all the technical requirements of the Universal Service Order and that it can provide a solution to 450k consumers. The average speed provided by the service is excellent, latency is low and we offer packages with 100 GB data allowances.
4. We can fulfil consumers' orders within our standard one day lead-time (or 14 days if an external antenna is required or requested) and expect to have sufficient capacity in our mobile network to fulfil the majority of orders within these timescales (most network upgrades will be planned well in advance, as part of the usual capacity management process).
5. We also consider fixed wireless access will be consistent with the affordability criterion. With growing take-up of the service, we would expect pricing to be in line with comparable fixed line products.

Fixed line network build to the 40k premises below the cost threshold.

6. For the remaining 150k premises, there is no suitable network in place and so further fixed network build would be required. This could be done by Openreach, a wholly owned subsidiary of BT, or by other communications providers.
7. Of the 150k premises, we estimate that around 40k could be provided with a fixed line connection below the £3,400 cost threshold. These 40k premises are dispersed and lie in very hard-to-reach areas; connecting them will be resource-intensive and challenging. We see two options for addressing them:
 - Option 1: Our preferred option is for BT to request Openreach proactively to deploy network to the premises below the cost threshold as soon as possible. In response, we expect Openreach would, after consultation with its wholesale customers, initiate a network build to the 40k premises with the costs recovered through the Wholesale Local

Overarching principles

In formulating our response we have considered a set of overarching principles that we believe reflect Government's and Ofcom's objectives for the universal service and more widely.

The universal broadband solution should:

- deliver as fast as possible and at the lowest possible cost
- minimise the burden on industry
- do as much as possible to close the gap between broadband haves and have-nots
- embrace convergence between fixed and mobile services
- promote competition
- be developed in close alliance with wider initiatives and support Government's 2033 objectives for fibre and 5G

Access charge control. This approach would enable fixed line services to be provided competitively by Openreach's customers outside any formal Universal Service Obligation (USO) scheme.

- Option 2: Alternatively, and if designated as Universal Service Provider (USP), BT could operate a scheme under the USO that would initiate network build (by Openreach) but only when sufficient demand is achieved in an area. BT would recover the unfair net cost burden through the USO fund. We see this option as materially less attractive than Option 1: in particular we are concerned that the challenge of demand aggregation after designation will slow the build process.
8. We believe the first of these options will be both quicker and cheaper, imposing lower costs on industry and offering greater scope for competition.

USO plus other measures for the 110k premises above the cost threshold.

9. If BT is designated as a USP, it would offer an on-demand quotation scheme for the 110k premises that would lie above the cost threshold. Interested consumers could elect to pay the excess cost, either individually or as a community. As with Option 2 above, BT would commission build from Openreach and recover the unfair net cost burden through the USO fund.
10. In practice, we anticipate that the excess costs will be high so that only a relatively small proportion of these consumers would elect to pay. Hence, we believe that addressing those premises effectively requires further combined industry, Ofcom and Government efforts, including targeting those premises by future publicly funded schemes and policy initiatives by the Government and devolved administrations. The Government's proposals in the Fixed Telecoms Infrastructure Review (FTIR) published on 23 July 2018 are clearly of direct relevance to meeting this challenge.

Our proposed approach is the best way of meeting Government's and Ofcom's objectives

11. BT's proposed approach would bring the following benefits:
- For consumers that currently do not have decent fixed broadband: the use of fixed wireless access services will transform the broadband experience for nearly half a million consumers by the end of 2020, with many getting an improvement in their services earlier. They could receive broadband at an average speed higher than the USO speed, and in most cases would not need to wait more than a few days for delivery.
 - For industry and all consumers: the costs of delivery (and hence the size of any USO fund) will be minimised. This will reduce financial uncertainty from an industry perspective – important at a time of considerable investment. The emphasis on fixed wireless could also include other mobile networks; and a pro-active build by Openreach will allow for additional competition from alternative providers on the (open access) fixed network. All of this will further benefit consumers.
12. Alternative approaches would take longer to deliver and are likely to reach fewer consumers – significantly fewer if fixed wireless is not part of the picture. They will also cost more.

With the right regulatory assurances, we are willing to be designated as a USP.

13. We confirm that, if Ofcom agrees with our preferred option, and subject to the dependencies we have articulated (in particular, clarity on realistic delivery timelines and cost recovery mechanisms), we would be willing to be designated as the USP (outside the Hull area).

14. Whichever route is taken, BT remains concerned with the lack of certainty and clarity about cost recovery and the operation of a USO fund. These concerns are inevitably magnified in options where the level of costs is higher.

1. Introduction

- 1.1. This document sets out BT's response to Ofcom's call for expressions of interest published following the Government's Broadband Universal Service Order of 2018.¹
- 1.2. **We fully support the Government's objective** of giving everyone in the UK a legal right to a decent broadband connection by 2020, up to a reasonable cost threshold. This is an important part of the wider Government ambition to improve fixed and mobile networks in the UK and to ensure that even the hardest to reach areas are not left behind.
- 1.3. Working together, industry and Government have made good progress in rolling out superfast broadband in the UK. BT has played a central role in driving 30Mbps superfast broadband to 91% of premises, with 95% of premises now able to access a 24Mbps connection. BT's commercial footprint has been vital to achieving this progress, alongside publicly funded roll-out schemes such as those by BDUK² and Community Fibre partnerships.³ Our future investment plans will help push coverage even further.
- 1.4. In addition to our fixed network, BT's mobile network (through EE) currently covers 90% of the country by geography. Fixed wireless access (FWA) could deliver a 10Mbps or higher service to [3<] % of UK premises. This network delivers high speeds, low latency and data throughput capabilities that meet or exceed the broadband USO technical specification.
- 1.5. **BT is a strong advocate of the principle of universality.** Access to decent broadband and the ability to use the internet for business, education, news and entertainment has become essential to people's lives everywhere in the UK. As we move towards full fibre and 5G, this universality principle should stand, and we will continue to support policy makers to ensure high quality connectivity is made available as widely as possible, within the right regulatory framework and at a reasonable cost.⁴
- 1.6. Openreach – backed by the BT Board – is already rolling out to connect 3m homes to FTTP. It has also indicated an ambition to extend its FTTP footprint to 10m homes by the mid-2020s and, if the conditions are right, to go significantly beyond, bringing the benefits of FTTP to the majority of homes and businesses across the UK. Other companies are rolling out high speed networks too.
- 1.7. The improvements we have already made to our network have helped contribute to a sharp reduction in the number of consumers unable to access a fixed line broadband connection that meets the USO specification.⁵ Ofcom estimates that 1.1m premises fell into this category in May 2017 and the figure had reduced to 0.9m premises by the start of 2018. This means around 98% of premises have access to USO specification fixed line broadband.
- 1.8. We expect this trend to continue with our plans for future investment, further third-party commercial roll out and public sector support such as the Local Full Fibre Networks programme.

¹ The Electronic Communications (Universal Service) (Broadband) Order came into force on 23 April 2018
<http://www.legislation.gov.uk/uksi/2018/445/contents/made>

² Last year alone, 800,000 premises were reached through the BDUK programme, with Openreach delivering to 774,000 of these homes and businesses.

³ So far Openreach has committed to more than 500 of these projects across the country, and some 65,000 homes and businesses have now benefited from Openreach customised build as a result of these partnerships.

⁴ See "BT's response to DCMS Fixed Telecoms Infrastructure Review: Call for Evidence", January 2018

⁵ Minimum download speed of 10 Mbps and upload speed of 1 Mbps. Additional quality parameters: medium response times, a minimum data cap of 100 GB per month and a contention rate of 50:1.

- 1.9. Nevertheless, despite the ongoing efforts across industry, we share Ofcom's view that around 600k premises will not have a USO specification fixed line connection available to them in 2020. Many of these premises are in rural areas, often situated a long way from the telephone exchange or local street cabinet.
- 1.10. **BT stands ready to take a leading role in addressing this gap.** We want to work with Ofcom, the Government and others in industry to deliver a universal broadband solution to the vast majority of premises even more quickly than under the challenging timeline outlined by the Government and Ofcom.
- 1.11. Subject to getting sufficient assurances on the issues raised in this response, we propose to do so commercially through a combination of fixed wireless access (to 450k premises) and requesting a proactive network build from Openreach (to 40k premises). The remaining 110k premises are above the £3,400 cost threshold; if designated as the universal service provider, BT would offer them a connection as part of the USO scheme subject to their paying the excess costs above £3,400.
- 1.12. The remainder of this document is structured as follows:
- **Section 2** sets out how we propose to provide a universal broadband solution within the shortest possible timescale to the vast majority of remaining premises by leveraging our existing fixed wireless network.
 - **Section 3** sets out two options for expanding Openreach's fixed access network in hard-to-reach areas and our preference for a targeted proactive network extension by Openreach ahead of any formal designation, subject to consultation with other communications providers.
 - **Section 4** discusses the outstanding challenge of premises above the cost threshold.
 - **Section 5** explains how we would deliver an excellent consumer experience in our role as USP.
 - **Section 6** sets out why our approach is the fastest and most efficient solution.
 - **Section 7** sets out some key interdependencies and regulatory assurances needed under our approach and other alternative models, including in relation to cost recovery.
- 1.13. We also supplement our response with the following Annexes:
- Annex 1 the impact of fixed wireless access (FWA) on USO eligibility.
 - Annex 2: Funding a broadband USO via a cost sharing scheme.
 - Annex 3: Responses to Ofcom's questions.

2. Leveraging existing fixed and mobile networks

Existing FWA could serve most premises needing decent broadband

- 2.1. At present, Ofcom estimates that around 900k premises do not have access to a fixed line connection meeting the USO specification. We agree with Ofcom and with their assessment that this figure will drop to around 600k by 2020.
- 2.2. We share Government's and Ofcom's objective to tackle this lack of availability and ensure that the vast majority of premises in the UK can receive decent broadband.
- 2.3. In practice, we have found that a large proportion of the premises without a decent fixed line connection can already be served with a FWA connection using 4G networks that meet the USO specification. Indeed, we think we can address 450k of the 600k households using our own 4G FWA solution.⁶ Further details of our estimation approach are set out in Annex 1.⁷
- 2.4. Importantly, the Universal Service Order does not specify the technology that should be used to deliver the USO in line with the principle of technology neutrality.⁸ The choice of technology is left open to the USP, subject to it meeting the technical specification in the Order.⁹
- 2.5. We believe the same principle of technology neutrality should apply to the consideration of eligibility. In particular, if FWA services meet the service criteria, then the 450k premises that can receive FWA services from BT would not formally be eligible for the USO since they already have access to a commercially available service that complies with the USO specification. Nor would additional premises that can receive a USO specification service from other FWA providers.
- 2.6. Indeed if those premises were included within the formal USO scope, the USO would overbuild commercial deployment, undermining commercial business cases, dis-incentivising commercial investment and raising costs.
- 2.7. We consider that this approach is consistent with Government's objectives. In its consultation on the USO, DCMS set out its preferred way forward:

*"USO eligible premises will not have a similar or more highly specified service available from another provider, that is to say that eligibility is limited to areas the market has not reached. This will help ensure that the USO does not lead to overbuilding of other networks - as the intention of the USO is to provide access where there is currently none which meets the USO specification."*¹⁰
- 2.8. This is not to say that the 450k premises that can, in principle, receive FWA should not be guided towards a decent connection – on the contrary, as we explain in Section 5, we propose to put in place specific arrangements to ensure that these consumers are aware of the services that are available and receive the right kind of customer support.
- 2.9. **We would welcome confirmation from Ofcom that the eligibility criteria will take into account the availability of similar, or more highly specified commercial services, that meet**

⁶ Estimate based on -105 dBm loss using 1800 MHz spectrum. It may also be possible for other FWA providers to deliver a USO-standard connection to additional premises, but in this response, we focus on the premises that we are able to serve directly.

⁷ Throughout this response our estimates are based on the best information available at the time of writing.

⁸ Paragraphs 3.12-3.13 of Ofcom's call for expressions of interest: "Implementing the Broadband Universal Service Obligation", 19 June 2018.

⁹ Section 1 of Schedule 1 of the Universal Service Order.

¹⁰ "A new broadband Universal Service Obligation: Government's response to consultation on design", March 2018, Page 30

the minimum specification set out in the Universal Service Order, and that FWA is such an alternative.

Our FWA service comfortably exceeds the USO technical specification

- 2.10. Government and Ofcom have recognised the importance of considering evolving technologies when setting the USO (as required by the Universal Service Directive).¹¹
- 2.11. In December 2016, Ofcom provided technical advice to Government in which it considered that alternative technologies to fixed line connections were able to meet the technical specification of the USO.¹² However, it highlighted concerns about spectrum availability and high infrastructure costs.
- 2.12. Since that analysis was completed, the fixed wireless broadband proposition offered by EE – known as 4G EE Home – has developed considerably. Compared to fixed line alternatives, it is now a technically superior¹³ and more cost-effective solution for many consumers in hard to reach areas. The commercial deployment of our own network¹⁴ and other fixed wireless services (some using public procurement¹⁵) has shown that deployment barriers can be overcome in many areas of the country that were previously considered too hard to reach. This should put to rest potential concerns that the availability of spectrum and prohibitively high infrastructure costs could rule out scale deployment of this technology.
- 2.13. A key advantage of our FWA service is the speed with which consumers can get connected. This is important to consumers and directly relevant to the challenging Government timescale for delivery of a broadband USO. Our 4G EE Home solution exceeds all expectations set out in the USO in this regard. Not only can the service be delivered quickly but the average download speed for the service is 31Mbps. This offers a far superior service for households to the minimum of 10Mbps set out in the USO legislation.
- 2.14. An effective FWA service needs to work properly indoors. In most cases (around 70%) the quality of network signal is sufficient for indoor use. However, to address the 30% or so of premises where this is not the case, we have recently supplemented our 4G EE Home product with an external antenna option. This is delivered with a professional installation service and has been designed for use on properties with good outdoor coverage but variable indoor coverage. This improves both the speed and consistency of the 4GEE Home Router. In recent customer trials conducted in the Cumbrian Northern Fells, speeds of 100Mbps were achieved.
- 2.15. Table 1 sets out a fuller analysis of 4G EE Home against the USO technical specification. It shows that it comfortably exceeds the requirements in all areas.

¹¹ Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive), at Recital (25).

¹² Figure A4.19, Ofcom Technical advice to UK Government on broadband universal service, December 2016

¹³ We are now on the third iteration of the router hardware launched in Sept 17 which offers faster speeds (Cat 7 device which supports up to 300Mbps download and 100Mbps upload). Also includes an antenna port to support the antenna solution we launched in Feb 2018 (the antenna solution means even consumers who don't get good indoor 4G coverage can benefit from the product).

¹⁴ BT's EE 4G network covers [3<] % of the UK premises at 10Mbps (modelled at -105DBs)

¹⁵ For example, in BDUK procurements the ability of the technology to deliver superfast equivalent services is a pre requisite to receiving such funding and independently assessed by the government.

Table 1: Comparison of 4G EE Home against USO technical specification

Specification	Comments
Download sync speed of at least 10 Mb per second Upload sync speed of at least 1 Mb per second	<ul style="list-style-type: none"> • Our FWA coverage prediction is based on our coverage models to deliver a service of at <i>least</i> 10Mbps downstream and 1 Mbps upstream using our 1800Mhz and 2600 Mhz spectrum • Coverage is based on our existing mast infrastructure. • 4G signal level assessed at -105Dbm for external coverage¹⁶ • An external antenna is assumed for ~30% of premises to enable these additional premises to be addressed at the specified speed. • EE continues to lead all operators in independent testing of 4G network speeds which illustrates our ability to offer market leading speeds over 4G networks.¹⁷ • Our existing EE 4G Home product currently offers an average 31Mbps downstream service to consumers.
Contention of no higher than 50:1	<ul style="list-style-type: none"> • Our existing 4G EE Home service uses capacity planning rules that materially exceed this requirement.
Latency which is capable of allowing the end user to make and receive calls over the connection effectively	<ul style="list-style-type: none"> • Independent testing of the EE network by Opensignal illustrates a latency of 40.35ms over 4G¹⁸ which is more than sufficient for a voice call: ITU-T G.114 recommends a maximum one-way latency of 150ms for VoIP.
Capability to allow data usage of at least 100 gigabytes per month	<ul style="list-style-type: none"> • 1800 Mhz and 2600 Mhz spectrum considered which offers sufficient capacity for a USO technical specification. • Our capacity management systems identify when and where additional cellular capacity is required, which would be planned into our normal capacity uplift programmes.

2.16. This technical analysis means little unless consumers are satisfied with the product. Our current consumer feedback is strongly positive, and we have commissioned additional consumer research which we are happy to share with Ofcom as soon as it is available – we expect results in October 2018.

2.17. Naturally, Ofcom, Government and consumers will want assurance that this level of performance will be sustained. At present, take-up of the service is relatively low at 17k– it is an evolving product and we have yet to market it extensively. We recognise that as FWA

¹⁶ We have modelled at -105DBs for outdoor/in coverage.

¹⁷ Rootmetrics – EE speed score of 91.7 1H 2018, 13-August 2018

¹⁸ Opensignal: State of Mobile Networks: UK (April 2018)

becomes an important part of rural broadband delivery, there is inevitably scope for pressure on capacity at some cell sites.

2.18. We will address this in two ways:

- First, we will take into account expected levels of FWA take-up as part of our normal planned capacity upgrade programme for our 4G network. This should minimise any pressure on particular cell sites.
- Second, we will ensure a rapid reactive approach to capacity upgrades if demand in particular areas exceeds expectations. We believe the vast majority of necessary upgrades will be managed as part of the business as usual planning process.

2.19. In addition, we have previously looked at FWA customer premise equipment (CPE) that will allow us to actively monitor speeds in the same way that we can with fixed line CPE. If required, this is something we could revisit.

We will ensure that our FWA service is affordable

2.20. The Universal Service Order requires the provision of "affordable" broadband meeting the stipulated technical specification to eligible premises. Government and Ofcom are both clear that they expect any USO solution to be affordable.

2.21. Ofcom has discretion to consider affordability of alternative solutions, such as FWA, when deciding whether premises should be eligible for the formal USO. As part of this, it should look at comparable products.

2.22. For unlimited fixed line packages, consumers on sub-10 Mbps copper-based broadband services today currently pay £45.49 per month (after the initial contract period from BT Consumer). In BDUK and commercial areas, they can elect to contract for a fibre broadband service which provides a faster speed. Typically this is priced at £44.49 to £58.99 after the initial contract period, depending on the speed.

2.23. The current pricing of our FWA product reflects its current positioning in the market – as noted above it is a relatively new service for which we are currently managing take-up. The price of the 100GB package (meeting the data specification set out in the Universal Service Order) is currently £55 per month (within contract). Where an antenna is required, we provide and install it for an additional one-off fee of £100.

2.24. With wider take-up of the FWA product, we would expect to be able to evolve pricing in line with our recently announced Consumer strategy.¹⁹ We would expect that pricing would pass on efficiencies of supplying this product at volume so that prices would likely fall. We therefore believe we can meet the affordability criterion and are happy to discuss this further with Ofcom.

We can meet consumer needs much more rapidly using FWA

2.25. One of the great benefits of FWA is that we already have a network in place, so we can respond rapidly to demand. Where there is sufficient network capacity, we will fulfil consumers' orders immediately – a consumer ordering online or by phone will typically receive service the

¹⁹ Consumer business briefing 17-May-18 -

<https://www.btplc.com/Sharesandperformance/Presentations/lobpresentations/downloads/ConsumerBusinessBriefingpresentationMay2018.pdf>

following day. Where a consumer requires an external antenna, an engineer is required and we can complete installations within 14 days.

- 2.26. As explained above, in some cases, where demand exceeds the expectations built into our capacity upgrade programme, we will need to build additional capacity on a reactive basis. In the vast majority of those cases, we expect to be able to carry out the necessary network upgrades in advance. We expect that any exceptions to this would take significantly less than the 12 months anticipated by the USO proposals.²⁰ We do not expect that this would impact our customer lead-times in the majority of cases.

Our future plans will further improve the service to consumers

- 2.27. Over the coming years we intend to develop and enhance our FWA product. Of particular relevance, we are currently trialling a fixed and mobile hybrid service²¹ for launch during 2019. This uses a modem/router that connects both to fixed line and fixed wireless. It responds dynamically to the level of demand. Where fixed line is sufficient to meet customer needs, fixed wireless is not used. Any time there is an increase in demand beyond that which can be met by fixed line, additional traffic is carried over fixed wireless.
- 2.28. This provides direct benefits to consumers as the service offers higher speeds and an extra layer of resilience. By reducing capacity requirements on our wireless network, it will also reduce the number of consumers for whom a network capacity upgrade is required meaning that a greater proportion of orders will be fulfilled within 14 days. The hybrid solution could also potentially allow us to address additional premises beyond the 450k that we can cover today.

²⁰ Under exceptional circumstances upgrades may take longer where reasonable site access is not possible – for example where weather conditions may prevent access to certain sites for a prolonged period of time.

²¹ Consumer business briefing 17-May-18 -

<https://www.btplc.com/Sharesandperformance/Presentations/lobpresentations/downloads/ConsumerBusinessBriefingpresentationMay2018.pdf>

3. Expanding our networks to reach more premises

Introduction

- 3.1. In the previous section, we explained our view that of the 600k households not expected to have a fixed line USO specification broadband connection in 2020, 450k can be very effectively served using FWA. That leaves 150k households that are potentially in the scope of the formal USO.
- 3.2. The Universal Service Order draws a distinction between premises (a) where the costs of provision are less than £3,400 individually, or where this could be achieved collectively with other premises on the same infrastructure; and (b) where the costs exceed £3,400. Both categories are in principle eligible under the USO scheme, but consumers in category (b) would have to pay the excess above £3,400 to be eligible.
- 3.3. We have assessed the costs of delivering a service to those premises unlikely to have access to a USO compliant service in 2020 after the availability of our own fixed and FWA products are taken into account. Our assessment considers the geographic location of each premise and the infrastructure that would need to be built to provide a suitable service. This allows us to consider how many premises could be served by the infrastructure and therefore allows us to determine what the cost per premise would be based on varying levels of demand.²² Third parties and any planned public sector led rollout could further reduce the number of premises.

Two options for the 40k premises below the cost threshold

- 3.4. Figure 2 shows the number of premises that could be delivered within the cost threshold (assuming network costs only) at different demand levels. Beyond a certain point there are insufficient premises on an infrastructure to achieve the cost threshold.
- 3.5. As the chart shows, after FWA is taken into account, around 40k premises fall below the cost threshold at a take-up level of 80%.²³
- 3.6. By their very nature, none of these premises can be addressed easily. They are in extremely hard-to-reach areas and are widely dispersed. Connecting them will be complex, resource intensive and time consuming.
- 3.7. In this section we set out two options for providing these premises with a USO-specification broadband service.
 - Option 1: proactive build by Openreach (following a consultation).
 - Option 2: reactive build with BT Group, as USP, commissioning build from Openreach.
- 3.8. We describe each of these options in turn.

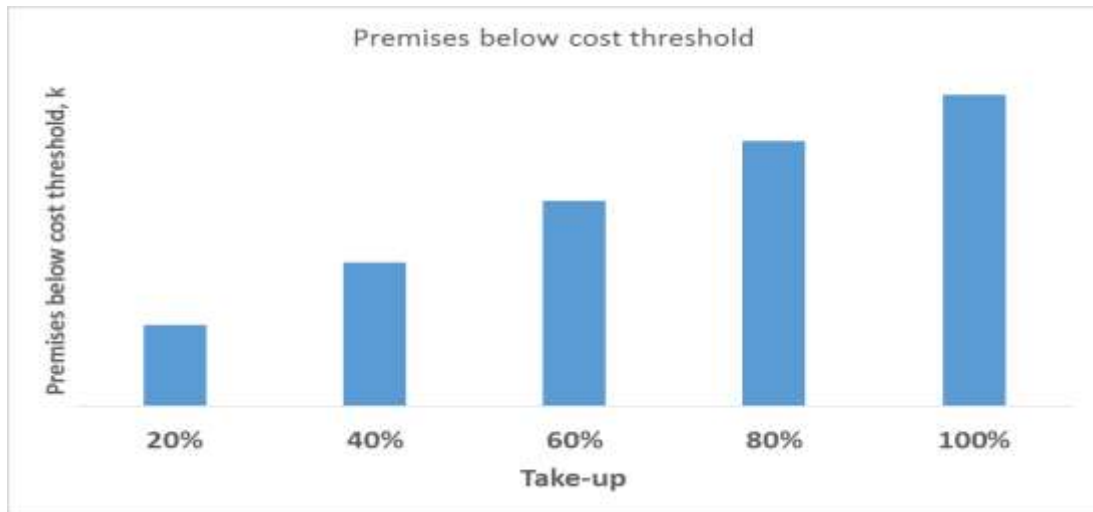
Option 1: Proactive build outside scope of USO

- 3.9. Under option 1, BT would request Openreach proactively to deploy network for premises within the cost threshold. These households would then fall outside the scope of the formal USO.

²² Our illustrations are based on "network costs" only, and we would expect that other allowable costs, such as customer NTE and service costs, will need to be taken into account. This may reduce the number of premises that could be addressed within the cost threshold.

²³ 80% take-up used for illustrative purposes and we expect Ofcom to consult on take-up assumptions later this year.

Figure 2: Number of premises that could be served within the cost threshold at differing levels of take up



- 3.10. Before commencing network planning and build, Openreach would consult with its wholesale customers. Depending on the outcome of the consultation, it would initiate a coverage-based programme to the 40k premises that we estimate could be served at less than £3,400 based on an assumed take-up level of 80% (illustrative figure).
- 3.11. It is too early to be precise about the nature of the network build – this would depend on the outcome of Openreach's consultation process. However, it is likely that it would be fibre-based, and in most cases FTTP.
- 3.12. If Ofcom were to consider that this is a viable option, and Openreach received a positive response to its CP consultation, Openreach would be able to commence its planning processes ahead of the completion of Ofcom's formal USO designation process, meaning that we would be able to give consumers greater certainty over delivery timescales than under a more reactive approach.
- 3.13. Importantly, the network build envisaged under this option would be a proactive roll-out by Openreach (Openreach estimates that costs would be circa [3<]for the fixed network upgrade). Consumers within reach of the new network would benefit from retail competition and have a choice of ISP. Hence we would expect pricing to be the same as offers available elsewhere in the country.
- 3.14. Our ambition is that Openreach would progress as rapidly as possible with network deployment, although this is of course a matter that Openreach would need to manage within its overall resource. We currently anticipate that the proactive network build would start to reach premises during the course of 2020, with the vast majority reached by the end of 2021.
- 3.15. It is critical under this approach that Openreach has a clear path to recovering the costs of the proactive roll-out. Our assumption is that costs would be recovered through WLA charges by allowing scope for costs incurred ahead of the next charge control (from 2021) to be factored into that control in a NPV neutral manner. We estimate that the impact on wholesale charges will be small. In August 2017, Ofcom estimated that the increased charge per line to recover network expansion costs had a median estimate of £1.93 per year in 2020/21 (around 16p per month). A predominant deployment of FWA would significantly decrease the necessary expenditure on fixed technologies, and the charge control impact in 2020/21 would be

correspondingly reduced to a few pence a month on each broadband line (approximately [redacted] per month).²⁴

Option 2: reactive build under USO

- 3.16. Under this second option, the 40k households below the cost threshold would fall within the scope of the formal USO. If BT Group is designated as a USP, it would address these premises by operating a demand aggregation scheme in line with the proposals set out in Ofcom's document.²⁵ Where the number of customer orders to BT in an area reached a level that allowed the deployment to be undertaken within the threshold, BT would commission Openreach to build.
- 3.17. With regard to cost recovery, our expectation is that Openreach recovers excess construction charges from BT Group and that BT Group would then recover these costs from the Universal Service fund. We set out further thoughts on the fund arrangements in Section 7 and Annex 2. The limited information at present on how a funding mechanism would work, and the uncertainty about what can be recovered when, remains a source of concern to BT.
- 3.18. In principle, we would expect similar numbers of premises to be addressed under this option as under Option 1 and our costings are based on this assumption. However, we are concerned that the demand aggregation process may be complex and lead to delays. It may also push costs above the levels that we have assumed here. As Figure 2 implies, the cost to connect many premises will lie well above the cost threshold unless there is significant take-up within a particular area.
- 3.19. Ofcom's proposals on demand aggregation (which suggest assuming 70% take-up) may help mitigate this risk. However:
- They need to be reflected in the approach to cost recovery via the Universal Service fund – if take-up is below the figure assumed by Ofcom, we would expect this to be taken into account.
 - They may raise questions of fairness if they mean that some premises that are in fact above the cost threshold (because of lower take-up) get connected without having to pay an excess charge.
- 3.20. One of our biggest concerns with this option is the time it will take before any network planning can commence: under this option, BT would need to wait until conclusion of the USP designation process before commencing demand aggregation, and then (through Openreach) network planning and build.
- 3.21. With regard to pricing, the USO scheme is based on a consumer's right to ask for service and would involve the customer entering into a new contract for service at the higher speed. We would intend to use our current range of products and services to fulfil this requirement, although as with any portfolio, we would expect this to adapt and change over time in line with BT Consumer's announced strategy²⁶.

²⁴ Estimate that costs of Openreach network build extension would be only [redacted]% of UBC proposals and excluding 15% of Openreach lines without broadband comes to ~[redacted] per month.

²⁵ Ofcom suggests that Universal Service Providers could consider the costs of provision on the basis of forecast demand on an infrastructure, rather than the approach detailed in the Universal Service Directive where build can only be started when sufficient order levels are achieved. This would enable some pre-build to occur rather than having to wait until a given level of orders had been received.

²⁶ Consumer business briefing 17-May-2018.

- 3.22. We would expect that all other conditions of service would generally remain the same as our standard retail portfolio, including contract length, other than in exceptional circumstances.

Preferred option

- 3.23. **As we explain in more detail in Section 6 below, we have a strong preference for Option 1 and believe it is a much better fit with the Government's and Ofcom's objectives.** We believe the proactive build approach will be considerably quicker than with demand aggregation under Option 2.
- 3.24. However, we also recognise that even with proactive build, it will not be able to reach some of the 40k premises within twelve months of designation. We would therefore require an acceptance under this Option that any premises within the scope of the Openreach proactive build programme would be excluded from USO eligibility even if they might not receive a USO compliant service within 12 months of requesting one.

4.A collaborative approach to the hardest to reach areas

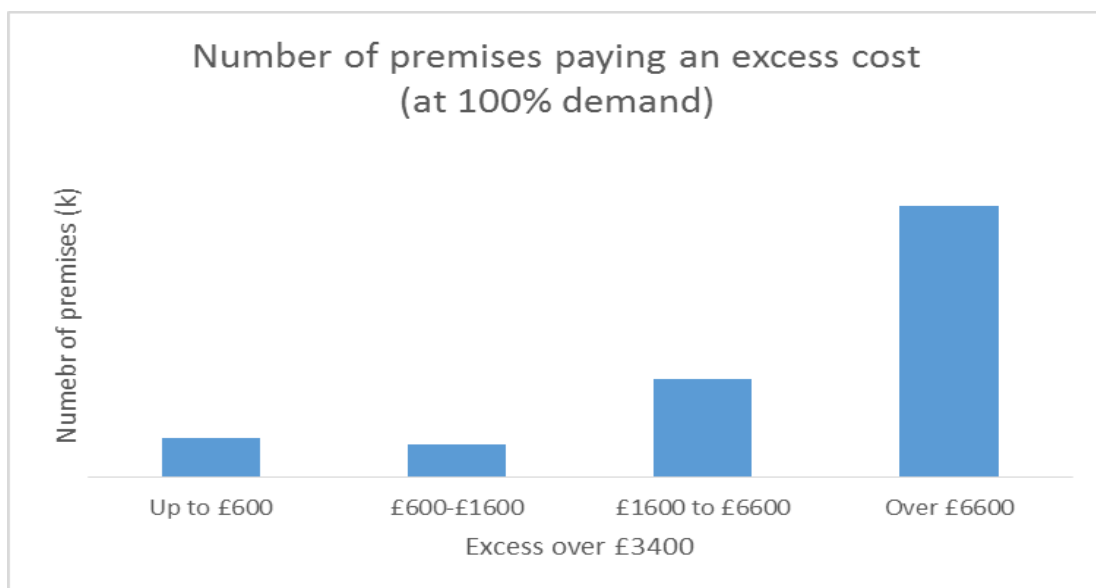
Universal service for those consumers willing to pay the excess over £3,400

- 4.1. Our analysis indicates that, using our networks, around 110k premises will lie above the proposed cost threshold – even at very high demand levels. The Universal Service Order gives these consumers the option to pay the excess costs above £3,400, with the unfair net cost burden below £3,400 being paid for out of the Universal Service fund.
- 4.2. For consumers in this category, we would follow a similar approach to that described in Option 2 above. Where a consumer requests service, we would request a cost quote from Openreach. If the consumer was prepared to pay the excess, we would commission the build from Openreach as appropriate. The consumer would pay the excess to BT Group, and BT Group would recover the unfair net cost burden from the Universal Service Fund.

A risk of limited take up in the hardest to reach areas

- 4.3. In practice, however, we anticipate that only a relatively small proportion of these 110k premises would elect to pay the excess costs over the threshold.

Figure 3: Number of premises above the £3,400 cost threshold (by amount of excess)



- 4.4. Our modelling is summarised in Figure 3. It suggests that:
 - around [3<] premises could be covered at an excess of up to £600²⁷ (i.e. the total cost would be between £3,400 and £4,000);
 - around [3<] could be covered at an excess of between £600 and £6,600²⁸; and
 - the remaining [3<] premises - the majority of the 110k – would face an excess above £6,600. In other words, the total connection cost would exceed £10,000²⁹.
- 4.5. Our estimates are based on 100% take-up and hence the maximum possible level of demand aggregation. In practice, we would expect take-up to be very low (given the level of

²⁷ Excluding VAT.

²⁸ Excluding VAT.

²⁹ Excluding VAT.

contribution required). Hence there would be limited demand aggregation and costs to individual premises would be considerably higher.

- 4.6. We believe that addressing these remaining premises effectively will require further combined industry, Ofcom and Government efforts working towards creative solutions. We see a range of possible options including:

A role for other industry players who can deliver under the USO cost threshold

- 4.7. Communications providers such as Virgin, Gigaclear or B4RN already have a network footprint that could potentially allow them to serve some of the 110k premises at less than the £3,400 cost threshold. We encourage Ofcom to explore this option and to consider designating some or all of these companies as USPs based on factors such as proximity to the consumer. This would be quicker and more efficient than relying solely on BT (or KCom in Hull).

Better information sharing and coordination with public service schemes

- 4.8. The Universal Service Order set out as one eligibility condition the non availability through a publicly funded intervention within a period of one year from the date of the request.³⁰
- 4.9. We remain concerned about the risk of overlap between industry network roll out under a USO scheme and roll out under publicly funded superfast and fibre schemes, such as Phase 3 of the BDUK Superfast Programme or R100 in Scotland. We think that around [3<] premises of the 600k premises not expected to have a USO specification fixed line service by 2020 could be in scope of delivery of public contracts.³¹
- 4.10. In our experience, deployment timescales at premises level are uncertain and highly fluid, even after contracts have been awarded, and we would expect planned dates to change. This will make it difficult to monitor whether or not services will be available within the 12 month window set in legislation. This could result in parallel funded deployments for the same areas within broadly similar timescales, confusion for end users and risks of stranded assets. It could also affect the viability of some contracts associated with Government deployment schemes, as broadband circuits delivered via the USO would be excluded. There is a risk that this tips the balance against a viable deployment in certain areas.
- 4.11. We recognise that the legislative limit of a 12 month eligibility window will make it difficult to entirely neutralise this overlap risk, but we believe it is critical that it is minimised. Better information sharing (e.g., consolidated deployment data shared with the USP(s)) and further coordination between Ofcom, Government and the devolved administrations would allow targeting of these premises in the most cost efficient way.
- 4.12. We also note the Government's commitment to invest in full fibre in rural areas at the same time as commercial investment in urban locations. The Government has estimated that this will require around £3 to £5 billion, and has agreed to pursue an "outside-in" strategy, to support investment in the most difficult to reach areas³². **We strongly welcome this.** In our view, the investment should be targeted, as much as possible, to the premises that fall above the USO cost threshold. We are ready to work with Ofcom and Government in the

³⁰ Schedule 1, paragraph 2(c)(ii) of the Universal Service Order.

³¹ Indicative only. This will depend on the strategy of the funding body and the bid outcome – such as technology used, operator selected.

³² DCMS Future Telecoms Infrastructure Review, 23 July 2018.

identification of these premises. As we do so, we should consider a combination of technologies, including fibre but also wireless and hybrid solutions.

- 4.13. Given these various initiatives, we believe there would be benefit in further coordination with Ofcom, Government and industry to better align the incentives of stakeholders who control key enablers, and to explore creative models with local communities to encourage build in particularly challenging areas.

Better consumer information on alternatives outside the USO

- 4.14. There will always be a minority of premises which are disproportionately costly to serve with either fixed line or fixed wireless solutions. The Government has consistently acknowledged that for these premises alternative connectivity solutions such as satellite may be more appropriate.
- 4.15. Satellite does not currently meet the specifications set out in the legislation, but for some of the hardest to reach consumers it may nevertheless be preferable to the status quo. The BT Universal Service Obligation Support Group that we propose to set up (see Section 5 below) could provide information on this and other options at the end of the customer journey

5. Consumer experience

Bringing our approach together into a single consumer interface

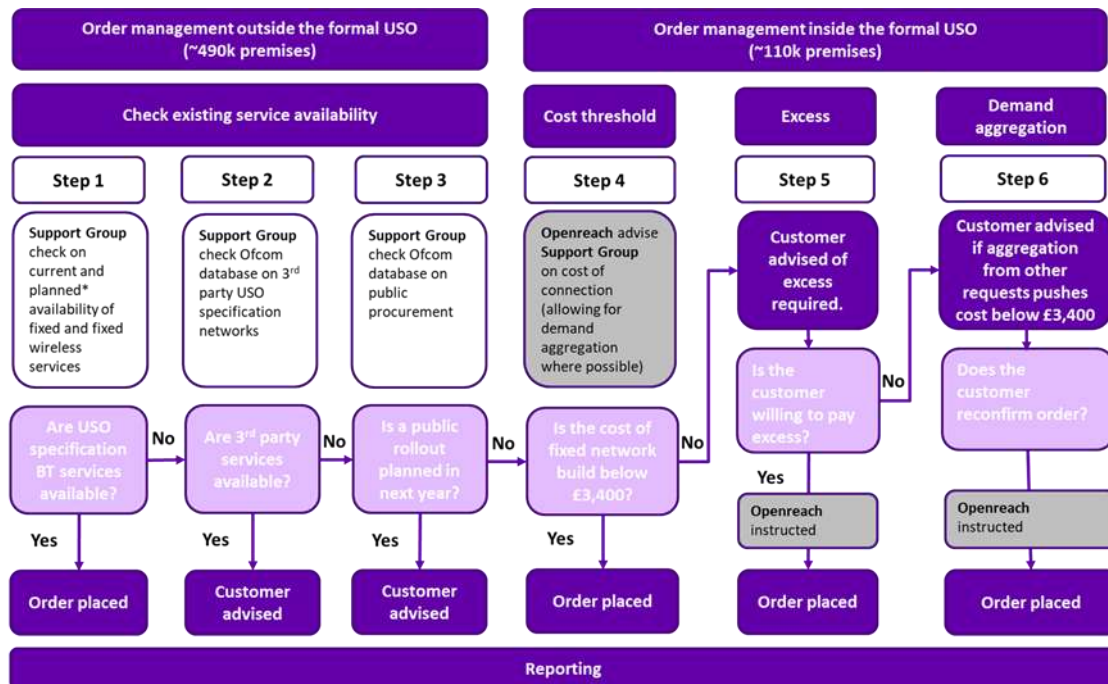
- 5.1. Sections 2, 3 and 4 have set out our proposed approach to delivering USO specification broadband to as many consumers as possible, as early as possible, at the lowest possible cost. In this section we explain how we would deliver an excellent consumer experience in the event of USP designation.
- 5.2. In developing the USO, the Government and Ofcom are hoping to achieve better infrastructure in the hardest to reach parts of the country. Many consumers in these areas will feel frustrated by the choice of digital connectivity currently available to them, and will see the USO as the answer. We also recognise that both the technical solutions on offer and the regulatory framework itself may be perceived as complex by consumers. In this context, we consider that the overall design of the customer service and delivery environment for universal broadband is essential to the success of the formal USO scheme.
- 5.3. Our view is that the approach should embody a strong customer service ethos. In particular, we think that it should have the following characteristics:
 - **Visible** – consumers know where to go to enquire about getting a USO service
 - **Clear** – consumers understand what service they are entitled to receive and why
 - **Comprehensive** – decisions are based on the best available data
 - **Responsive** – consumers get a quick decision and a clear timetable for service
 - **Transparent** – consumers and regulators can monitor the success of the scheme
 - **Fair** – consumers have a right to challenge outcomes they do not agree with
- 5.4. Ofcom has indicated within its call for expressions of interest that the ability to manage the entire process of delivery would be the responsibility of the USP.
- 5.5. We outline our initial thoughts on how we could deliver an outstanding service and universal broadband delivery environment below. We would look to engage with Ofcom and other stakeholders in this process.

Outline of the service environment

- 5.6. We would set up a dedicated team within our Consumer Business to own all aspects of the delivery from the handling of the initial end customer enquiry to the delivery of services. We have termed this team the "Universal Broadband Support Group" (UBSG) within the rest of this document to describe the functionality and responsibility that it would have. Consumers would have a single point of contact for universal service enquiries which would handle all elements of the preferred technical solution that we have set out previously; regardless of whether they are inside or outside of the formal USO. It would ensure that consumers get the right solution for them as quickly as possible.
- 5.7. We anticipate that it will take around 6-12 months to set up the UBSG, including any prior training and changes to systems, from the point where BT is designated as a USP or has certainty over what is required. While we can prepare much of the UBSG system in advance of designation, we will need to know the regulatory framework within which it will operate before going live. To ensure a consistent quality of service experience, it would be important to ensure that the USP is aware of any information and promotional activities by Government or Ofcom that may result in demand peaks. With the right regulatory clarity, we anticipate the service could be active and available for consumers to make enquiries from Autumn 2019.

5.8. Figure 4 gives an overview of the scope of the activities that would be undertaken by the UBSG, and how these map onto the technical solutions we have described earlier in our consultation response. The UBSG would confirm that a premises is eligible for a USO connection before it commissions any new network build. This covers confirming that the request is for a residential or business premises, and that no suitable alternatives (including FWA) exist from BT or 3rd parties (using data that Ofcom intends to provide).

Figure 4: Overview of the universal broadband service environment



* Including proactive rollout to ~40k premises that are not covered at the point of designation, and to the extent published by Openreach to all Communications Providers.

5.9. As Figure 4 sets out, we envisage 6 steps in the consumer journey that is visible, clear, comprehensive and responsive:

- **Step 1** – The consumer makes an enquiry to the service point, either online or through a call centre. Their details are registered. The UBSG assesses whether the premises is currently served by an existing service provided by BT. There are potentially three positive outcomes for the consumer at this stage:
 - There might be an existing **fixed connection** that meets the USO specification that the consumer is currently unaware of. In that case they will be informed of the service available and an order can be placed. The consumer will receive the service within our standard delivery time of 14 days. If the consumer enquiry has been prompted because they are experiencing quality issues in the home, for example because of the positioning of the router, the UBSG can provide the consumer with support already available under our existing customer service offer. We have not estimated the volume of enquiries that fall into this category.
 - There might be an existing **fixed wireless** connection that meets the USO specification that the consumer is currently unaware of. In this case the consumer will be informed of the service available and an order can be placed. We expect delivery of the service within up to 14 days for the majority of consumers and often much faster. However, in cases where we need to install additional capacity to ensure the service meets the USO specification,

we may need to commission some upgrade work which we would do as part of our business as usual planning process.

- There might be a **fixed connection available in the future under the proactive rollout** we envisage Openreach could undertake (under Option 1 in Section 3), or planned public sector rollout being delivered by BT. In that case the consumer will be informed that the premises will be receiving connectivity within the next 24 months, and an order can be placed. Since this will be a progressive rollout, many consumers can expect to get a service in much less than 24 months. In those cases, we will inform the consumer when they can expect to receive a connection wherever this is possible.
- **Step 2** – Where there is no existing service provided by BT, the UBSG assesses whether the consumer could be served by an existing service that meets USO specifications on a third-party network. The basis for this assessment will be Ofcom's proposed database of services across all operators. We believe Ofcom should include all technologies that meet the USO specification in this database to maximise the chance of the consumer being quickly connected to a service. If as a result the customer is not eligible for a USO connection they will be advised accordingly³³. The consumer will then have responsibility for proactively contacting the alternative supplier and placing orders. Given that we do not currently have access to third party commercial data, we have not estimated the number of consumers that could potentially be served in this way.
- **Step 3** – Where there is no existing or planned service by BT, nor an existing service from third parties, the UBSG assesses whether the consumer could benefit from a fixed connection in the future under planned public sector rollout within the next 12 months. The basis for this assessment will be Ofcom's proposed database of services across all operators, which should cover all services that meet the minimum USO specification. If as a result the customer is not eligible for a USO connection they will be advised accordingly³⁴. The consumer will then have responsibility for proactively contacting alternative suppliers and placing orders. Given that we do not currently have access to planned public sector rollout data, we have not estimated the number of consumers that could potentially be served in this way.
- **Step 4** – Once all existing and planned service options have been exhausted, any consumers that are still not able to obtain a suitable connection will enter into the **formal USO scheme**. The UBSG would request Openreach to make an assessment of whether the customer's premises can be served with an **on-demand connection at a cost of less than £3,400**. In making that assessment, Openreach will be asked to take into account any other outstanding enquiries in the local area that could be aggregated to lower the average cost of connection. If it is possible to deliver a connection for less than £3,400, the consumer will be informed of this outcome and an order can be placed. If designated as a USP, we would expect that the UBSG would have had the opportunity to work with Openreach so that they could provide an initial assessment of which premises were above or below the threshold. As this process may take several months, we would use a database to assist in customer handling. This would enable a response to individual customer enquiries to be made within 30 days from the point of enquiry to allow Openreach to conduct a rigorous assessment and allow for a window of demand aggregation. Our assessment is that the majority of premises under the £3,400 cost threshold will be served with a connection under the proactive rollout we describe in Step 1, and for this reason we have not modelled the number of orders we

³³Subject to the terms of use of the Ofcom database

³⁴Subject to the terms of use of the Ofcom database

expect to be placed in this way. We nevertheless expect a small number of consumers to be able to take advantage of this option.

- **Step 5** – Where Openreach's assessment of the cost of connection is above £3,400 it will provide the UBSG with a quotation for the full cost of the works. UBSG will inform the consumer of this outcome and offer them the **option of paying any costs above £3,400**. If the consumer agrees, the order will be placed and payment from the consumer will be taken by UBSG on delivery of a service. The consumer will also be given an estimate of when they can expect a connection, which will be within 24 months, although sooner wherever possible. We have not estimated demand for this service, but we note that around [3<] premises could be covered at an excess of up to £600.³⁵
- **Step 6** – Where the consumer decides not to pay the excess, they will not be eligible for an on-demand connection unless subsequent enquiries from other consumers result in **demand aggregation** that lowers the cost of connecting their premises below £3,400. It is also possible that the consumer premises will be covered by **future commercial or public rollout** of services by BT or any third parties that was not anticipated at the time they made their enquiry. Subject to the consumer's consent and compliance with applicable data protection requirements we would retain the relevant data and **contact them proactively** should any of these circumstances arise. After this, it would be incumbent on the consumer to raise a fresh enquiry. We could also provide consumers with **information on alternative technologies** that could improve their connectivity, such as satellite solutions. The consumer would have responsibility for pursuing any such alternative options.

Effective dispute resolution, reporting and governance

- 5.10. The consumer would be entitled to dispute any decision taken by UBSG. We envisage any disputes being dealt with according to our existing Complaints Policy³⁶. This includes recourse to the Alternative Dispute Resolution (ADR) scheme, which is run by the Ombudsman for Communications Services. This is a free independent service for consumers who are not satisfied with the final outcome of their complaint.
- 5.11. For reporting purposes, UBSG would compile statistics on the total number of enquiries, outcomes at each step of the process, and the number and outcome of any disputes. This would be compiled on an annual basis and be publicly available on the BT website, underpinning our principle of transparency.
- 5.12. The UBSG will be subject to internal governance, with clear lines of reporting to the BT Group Executive Board, and with processes for engagement with Openreach that are in line with the Commitments BT made to Ofcom under the Digital Communications Review.

We will apply our standard Quality of Service metrics

- 5.13. Services provided to consumers by the UBSG would replicate the quality of service levels that we offer elsewhere in the UK on our commercial and publicly funded networks.

³⁵ Excluding VAT.

³⁶ BT Customer Complaints Code:

https://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Codeofpractice/CustomerComplaintsCode/Complaints_code_of_practice.pdf

- 5.14. We publish quality of service levels and are constantly working to improve those still further. They can be seen at our Customer Website.³⁷ Going forward, we will continue to provide data to Ofcom for its work to monitor and compare service quality between providers. This performance in relation to broadband can be seen across a number of different measures in Ofcom's latest Comparing Service Quality Report.³⁸
- 5.15. We expect our services to support schemes such as automatic compensation, subject to limited exceptions in rare cases where local conditions meant that these were not appropriate or the technical solutions made it inappropriate (for example, if services were dependent upon a single point of failure that was inaccessible for a period of time, matters beyond our reasonable control, etc.).

Benefits of our consumer service approach

- 5.16. The consumer service approach that we propose to adopt has several advantages compared to the alternative of integrating the handling of USO enquiries within our existing customer handling systems and process. These include:
- **Faster set up** – Given the scale of our Consumer Business, adapting our existing processes would be a complex exercise. Setting up a new team minimises the length of time between any designation and customer service being available, so that consumers can exercise their right to request a connection as soon as possible.
 - **Bespoke handling** – The consumers likely to be affected by the USO are in hard to reach areas, and some enquiries are likely to involve complex handling (especially where customer quotation and demand aggregation is required). The dedicated team will be better trained to deal with the specific nature of those USO enquiries, and over time will build up experience of successfully resolving cases. This will build trust with consumers and ensure good customer satisfaction from efficient customer interactions.
 - **Confidentiality** – Ofcom proposes to give the USP access to confidential data concerning third-party network coverage and public sector procurement plans. This is essential to maximise the number of customer enquiries that will result in an improved connection for the consumer. To be effective, it will need high quality data from third parties. Ring-fencing access to this data away from our business as usual sales team gives confidence to third-parties that they can trust the UBSG will only use their data for the purposes of delivering USO outcomes to consumers. Moreover, the function the UBSG fulfils in directing consumers to services provided by third-parties where relevant should further incentivise them to provide high quality data as it will benefit them by directing consumers to their services where relevant.
 - **Associated Costs** – The UBSG will more easily be able to identify and track additional costs associated with the USO, making identification of unfair net cost burden easier for Ofcom. In turn, this will mean that any claims on the industry fund will be easier to administrate. This ensures that we will meet the high level of transparency and accountability that the public and the rest of industry will demand.
 - **Operational Responsibility** – The UBSG will have operational responsibility for the successful delivery of the USO scheme. Combined with the reporting arrangements we propose, this will ensure that the UBSG is properly incentivised to deliver a high-quality customer service.

³⁷BT Customer Service page: <https://www.bt.com/help/home/customer-service-performance/>.

³⁸Ofcom's Comparing Service Quality report, published in May 2018:

https://www.ofcom.org.uk/data/assets/pdf_file/0023/113639/full-report.pdf

6. The fastest and most efficient solution

- 6.1. Achieving universality requires creativity and flexibility, including in the choice of technology solutions. In responding to Ofcom, we have carefully considered our ability to deliver quality services that exceed the requirements of the USO, as soon as possible and at a minimum cost.
- 6.2. As we have explained, we estimate that it is possible already to serve 450k premises – the vast majority of premises that do not have access to a suitable fixed connection with a fixed wireless access solution (either our own or a rival's offered under competitive conditions). Therefore those should be excluded from USO eligibility. We also propose that Openreach proactively builds out to around an additional 40k premises that could be served with a fixed line connection below the cost threshold. BT's ambition is that the proactive network build allows some of these premises to get a USO standard broadband connection during the course of 2020 with the vast majority reached by the end of 2021.
- 6.3. This would significantly reduce the number of premises that would need to rely on a formal USO-funded service. If designated as a USP, we would be able to meet the obligations in line with our preferred approach outlined in this response, and subject to the key dependencies outlined in section 7 below.

BT's proposed approach would bring significant benefits

- 6.4. We believe our approach is the best way to meet both the Government's goals and Ofcom's desire to deliver USO quality services as quickly as possible, to as many consumers as possible, and at least cost. Our approach will benefit:
 - **consumers that currently do not have decent fixed broadband:** the use of FWA will transform the broadband experience for nearly half a million consumers by the end of 2020, with many getting an improvement in their services much earlier. Those consumers could receive broadband at an average speed that is significantly higher than the USO required speed, and in most cases would not need to wait more than 1 - 14 days for delivery. Our proposed additional fixed access network roll-out by Openreach to 40k premises ahead of designation would provide those additional premises with fixed line connectivity more quickly and more cheaply than waiting for demand to build.
 - **industry and the generality of consumers:** the costs of delivery (and hence the size of the USO fund) will be minimised. This will reduce financial uncertainty from an industry perspective and minimise the level of any potential industry contributions to a USO fund.³⁹ It will ensure that available industry resources are employed efficiently in further full fibre and 5G roll out, in line with Government and Ofcom's ambitions. The emphasis on fixed wireless would encourage FWA take-up across all 4G networks, and under a pro-active build by Openreach there would also be retail competition from alternative providers on the fixed access network. All of this would further benefit consumers.

Alternative approaches are less desirable

- 6.5. Relative to our proposed approach, alternative approaches would be more costly, fail to exploit economies of scale and scope offered by FWA, and give less certainty to consumers as to the

³⁹ We acknowledge that our preferred option may lead to very small increases in WLA charges (a few pence per month), but believe that this is the lowest cost and least distortionary means of meeting the USO objectives.

timing of delivery. Most importantly, because the cost to serve would be higher, they would reach fewer consumers.

A "fixed network only" approach

- 6.6. The guidance on the broadband USO has, from the outset, been clearly technology neutral. It has also been clear about the quality of service that USO consumers should receive. This has encouraged an initial preference for a fixed line broadband service using fibre products. However, now that FWA products are being rolled out commercially, we believe this mind-set needs to change.
- 6.7. In our view, both this response and Ofcom's own technical advice⁴⁰ provide compelling evidence that FWA is fit for purpose so that the fixed line preference is no longer appropriate. However, we have also analysed the consequences of relying purely on a fixed line solution to the USO.
- 6.8. Our modelling assumes 80% take up⁴¹ – more than Ofcom's suggestion of 70%. Even under this assumption (which we consider stretching⁴²) we estimate we could only reach around 300k of the 600k premises under the cost threshold. Hence around 300k premises would lie above the £3,400 cost threshold, compared with 110k under our preferred approach.
- 6.9. Moreover, the costs of a fixed roll-out would be considerably higher and delivery timescales much longer than under our preferred approach. We estimate that a fixed only scheme would require around [3<] of capex to be recovered through the proposed industry fund and take 3-4 years to deliver.
- 6.10. A further negative aspect of this more extensive fixed roll-out would be the diversion of resources from other programmes – especially Openreach fibre build. We currently face industry skills shortages and are concerned about a further tightening of the labour market over the next 1-3 years, particularly in civil engineering where we use contractors that rely heavily on European labour.

A combined "fixed first" and fixed wireless approach

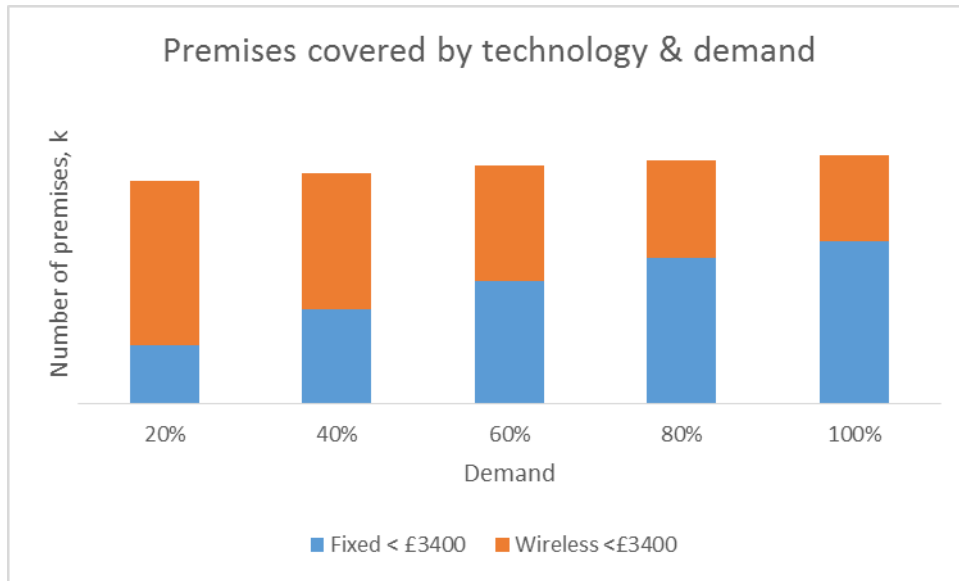
- 6.11. An alternative to the fixed only approach is one in which we prioritise fixed line provision, but supplement this with FWA.
- 6.12. As with the fixed only approach, we would cover around 300k premises (at an 80% take-up assumption) with a fixed line service. In addition we would cover around 190k premises with FWA (see Figure 5).

⁴⁰ Ofcom Technical advice to UK Government on broadband universal service, December 2016.

⁴¹ This is illustrative and we expect Ofcom to consult on the level of take up later this year.

⁴² We note the importance of allowing for some form of demand aggregation. However, a major challenge is that an on-demand build (even with significant demand aggregation) does not allow the network to plan when and where to build.

Figure 5: Premises covered under a fixed first scheme



6.13. Hence 490k premises would be served below the cost threshold – the same number as under our preferred approach.

6.14. However, the other drawbacks of the fixed only approach apply here as well: the costs and delivery timescales would be less attractive than under our preferred option, and there would be similar pressure on resources. We estimate that this approach would require additional capex of [redacted]⁴³ to be recovered through the fund and that it would take around 3-4 years to deliver.

⁴³ Includes appropriate fixed and FWA costs, but excludes existing investment in the 4G mast, and cell-site infrastructure.

7. Key regulatory interdependencies

Regulatory assurances are needed to progress our approach

- 7.1. We are confident that our preferred approach provides a compelling and effective means to address Ofcom's and the Government's objectives. We confirm that, on the basis set out in our proposal above, and subject to the dependencies set out below (especially around cost recovery, realistic delivery timeframe and our proposed FWA and proactive build approach) we would be willing to be designated as the USP in order to deliver decent broadband to the vast majority of UK premises (outside the Hull area). This is in line with the principle of proportionality, with regulation targeted at cases in which action is needed, in line with Ofcom's general duties.⁴⁴
- 7.2. In order to progress our approach, we need regulatory assurance that the timescales for delivery will be realistic and that the approach to cost recovery will be clear and effective. This section addresses each of these issues in turn.

Realistic timescales for delivery

- 7.3. The Universal Service Order sets out as one eligibility condition the non availability through a publicly funded intervention within a period of one year from the date of the request.⁴⁵ Ofcom acknowledges the cut-off point of one year was set out in the Order for the purpose of eligibility.⁴⁶ However, it considers this *"suggests that the maximum time that consumers should have to wait to receive a connection is one year from the request date. However, a shorter timeframe would be preferable if it does not result in disproportionate costs being incurred."*
- 7.4. Ofcom intends to consult on the proposed timeframe by the end of the year. We consider that imposing a 12-month or shorter maximum delivery timeframe from request, would be arbitrary and unrealistic, in light of how the market works in practice.⁴⁷
- 7.5. We estimate that under our preferred option the majority of consumers could receive a connection in this timeframe (including all those served by FWA). However, given that the objective of the USO is to serve premises in very hard to reach areas, the technical challenges of deployment mean that some premises will inevitably not be served within this timeframe (particularly where new network deployment is needed).
- 7.6. Under the alternative delivery options we have considered, we believe a 12 month timeline is even less realistic.
- 7.7. The anticipated timeline varies according to the delivery mechanism. We examine each of those in turn below:
 - **Fixed wireless access** – Where the consumer is provided with FWA they will usually receive services within 1-14 days. Some premises will need capacity upgrades, but we envisage this will typically be managed as part of the business as usual planning process. In exceptional circumstances any upgrades that cause a delay will be communicated in a transparent way to the customer. This accelerated timescale is likely to apply to 450k

⁴⁴ Communications Act 2003, at section 3(3).

⁴⁵ Schedule 1, paragraph 2(c)(ii) of the Universal Service Order.

⁴⁶ Paragraph 3.21 of Ofcom call for expressions of interest 'Implementing the Broadband Universal Service Obligation'.

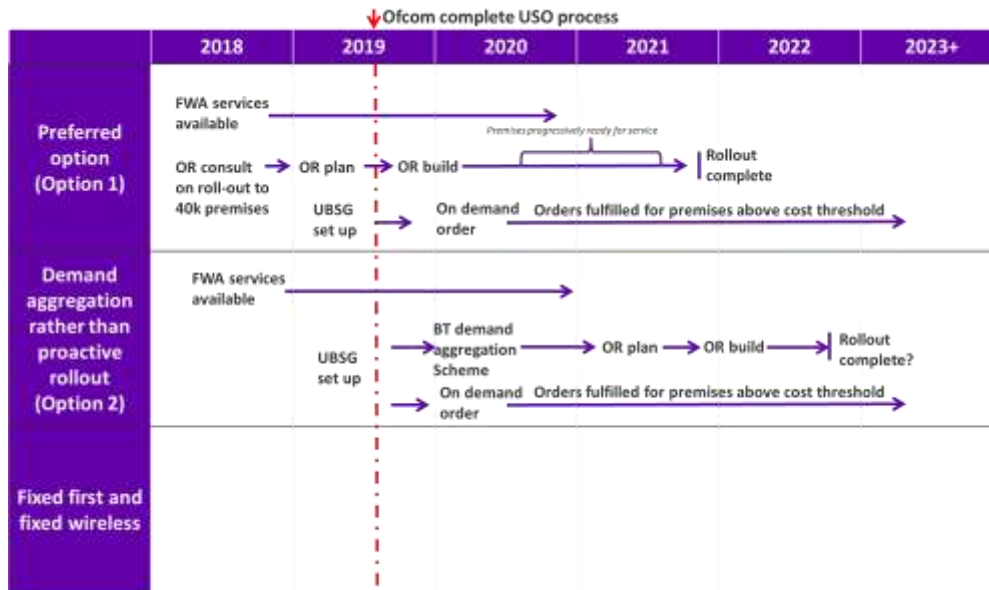
⁴⁷ Given we expect requests to be staggered, we consider it would be more practical for the delivery period to be triggered by the placing of orders (not initial request).

premises. Although not in scope of the formal USO, this solution allows us to address the majority of consumers in a way that more than meets Ofcom's ambitions for speed of delivery and quality of service.

- **Planned rollout of new fixed line services below the cost threshold** – We estimate we would be able to deliver fixed line connections to consumers within 24 months from the point at which build is committed. Build will progress in stages across the UK, meaning that consumers would be able to receive broadband in each local area as the network build is completed. Therefore, some consumers would receive service well within the 24 month period (areas that are easier and quicker to reach), but engineering challenges of serving highly complex areas and current resource within Openreach mean that we cannot at this stage commit to full delivery for every premise within a timescale shorter than 24 months. We have presented two options for delivering fixed services below the cost threshold. The choice of option here will have a significant impact on delivery for consumers occupying around 40k premises. Our preferred approach of a proactive rollout is the fastest way to deliver for consumers because it allows us to start earlier.
 - **Option 1: Proactive Openreach network build ahead of designation.** The proactive Openreach network build will provide a fixed line service to all ~40k customers delivered by late 2021, with many consumers receiving a service earlier. This assumes Openreach consultation in early 2019, followed by planning through to mid/late-2019 and build thereafter to the end of 2021.
 - **Option 2: Demand-aggregated Openreach network build programme following designation.** Under this option it will take much longer to serve the ~40k consumers. The demand aggregation process can only start following formal designation. Time lost by waiting for regulatory certainty before starting the process of network planning is a deadweight addition to our preference for a proactive rollout. It will reduce the level of certainty that consumers get when the UBSG enquiry point goes live.
- **Bespoke rollout of new fixed services above the cost threshold** – Where consumers elect to pay the excess above £3,400 in order to secure a connection, we currently consider 24 months from the point of order to be a realistic timeframe. For many cases it will be quicker, but we also recognise that there may be a small number of particularly challenging builds where even this is not possible.
- **Fixed only and fixed first schemes** – Delivery of all fixed connections would not be feasible within the 12 month timeframe. Under these schemes, roll-out can only start once the USP has been formally designated. The increased number of fixed line connections required under this approach (around 300k premises rather than 40k premises) make this a much bigger civil engineering exercise. While we would expect to deliver connections to premises progressively, this would have to be on a planned basis rather than 'first come, first served'. In turn, this means that we would not be able to guarantee connections within 12 months from the point of request. Indeed, we expect such a scheme to take until beyond 2023 to complete, missing the Government's manifesto target by some margin.

7.8. Figure 6 maps out these timelines against the delivery options we have considered.

Figure 6: Delivery option timelines



7.9. This analysis demonstrates two critical points:

- The importance of **Ofcom indicating that it is content with our suggested approach as soon as possible**. Continued regulatory uncertainty could potentially push the timeline back.
- Exclusion of fixed wireless technology, or a 'fixed first' approach, would add years to delivery timescales for hundreds of thousands of consumers.

7.10. Ofcom must recognise that our delivery of additional fixed rollout is unrealistic within a strict 12 month time window, and that even shorter timescales are implausible. This is driven by the challenge of delivering connections in the hardest to reach areas. **We need flexibility in appropriate cases**. Without this, tight regulatory timelines risk increasing the costs of delivering the USO significantly, or distracting BT from key wider objectives on digital infrastructure including the rollout of fibre in other parts of the country. This would be disproportionate. BT would welcome further discussion on a suitable model for timeframes that ensures consumers get a service as soon as possible, but recognises that a 'one size fits all' deadline does not fit each element of the optimal technology mix required to meet Ofcom's objectives of fast rollout and cost minimisation. Above all, we want to avoid a situation where regulatory timetables impose perverse incentives on the USP.

Early certainty and more clarity over cost recovery under the USO

7.11. Ofcom's document provides relatively few details on cost recovery. Before expressing interest in serving as a USP, it is essential for any USP to have a good understanding of the way in which cost recovery will work in practice.

7.12. It is now clearly established that the net cost recovered by the USP can include a reasonable profit.⁴⁸ The Universal Service Directive⁴⁹ requires (amongst other things) that:

- where a national regulatory authority (NRA) considers that the USO may represent an unfair burden on designated undertakings, the NRA shall calculate the net costs of its provision;

⁴⁸ Case C-280/00 *Altmark* [2003] ECR I-7747 (the third *Altmark* criterion); Case C-508/14 *T-Mobile Czech Republic and Vodafone Czech Republic* of 6 October 2015 (at paragraph 45).

⁴⁹ Articles 12 to 14.

- the net cost is to be calculated in accordance with Annex IV, Part A of the Directive (which is essentially that all incremental costs are covered, after revenues have been offset);
- when the NRA finds an unfair burden it shall upon request from the USP decide to introduce mechanisms to compensate the USP from public or industry funds;
- the principles for cost sharing, and details of the mechanism used, are publicly available; and
- an annual report is published where a fund is actually in place and working.

7.13. The Sharing of burden of USO in the UK is dealt with in section 71 of the Communications Act 2003. In this light, we set out in Annex 2 more details of how we envisage a scheme might work, and we note a number of areas of uncertainty where we require greater clarity:

- **Which costs can be included in the £3,400 Threshold?** It is currently unclear which cost elements (eg. network costs, customer router, service costs) can contribute to the £3,400 threshold. This will directly affect the number of households that can be addressed.
- **Can we presume a net cost burden?** It appears to us unarguable that the USP will incur a net cost burden for connecting premises within the scope of the USO. The very fact that these premises have not been commercially connected provides a very strong indication that the costs to connect them will be materially higher than costs to connect the generality of consumers. Given the requirement for uniform pricing, it is therefore clear that there will be a net cost.
- **Can Ofcom provide greater clarity on the approach to determining an “unfair” net cost burden?** Ofcom has estimated that the extra investment likely to be needed is somewhere in the region of £600m which represents, for example, nearly 40% of the Openreach annual capital budget and is equivalent to £60 per BT broadband customer. DCMS was also clear in March 2018 that it expected a net cost burden - *“The cost-sharing mechanism which is to be designed by Ofcom should provide sufficient funding without overly burdening industry or any single provider.”*⁵⁰ We need assurance from Ofcom that efficiently incurred costs will be covered by the fund (net of revenues earned). We also need clarity in advance of the USO on the principles that are to be used for cost sharing, and details of the mechanism to be used.
- **When will payment be made?** We are concerned that it may not be possible for payments to be made until the annual report (which is necessarily retrospective) is published. However, from our perspective prompt compensation for net costs incurred is essential to increase the readiness of suppliers to accept the obligations which Ofcom is proposing to impose.
- **How will premises be defined?** We are aware that the eligibility of the USO should be to residential premises or a place of business. There are many different types of premises that are detailed within the address information that we currently use, and that different organisations interpret this information in different ways. For example, we currently provide services to premises that are not included in Ofcom's definitions used when calculating premises information for the Connected Nations Report. A USP needs to have clear line of sight between its own network records and any 3rd party data (such as the Connected Nations Report) to determine eligibility. For example if we consider a premise as meeting the eligibility for USO, but it is not on the list provided by Ofcom for 3rd party access, or for future BDUK coverage, we may have incorrectly drawn the conclusion that it does not have a service, or none is planned – when in reality the premise is actually

⁵⁰ “A new broadband Universal Service Obligation: Government's response to consultation on design”, March 2018, Page 54.

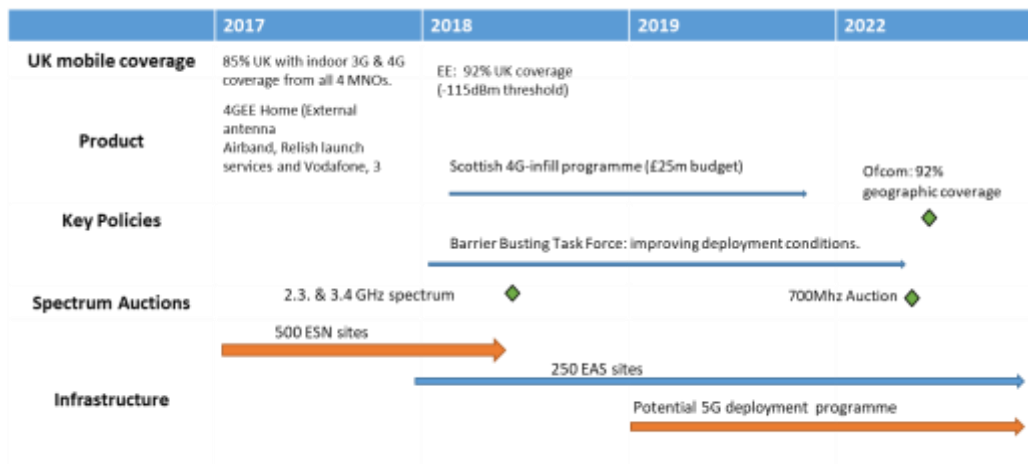
covered. This could result in the USP over-building an existing or planned network. We consider that any delivery to premises that are not in the Ofcom database, or to those that are subsequently revised to have 3rd party coverage, should be recognised as genuine USO provision, and that any future claim(s) for net funding burden should be on this basis. We would welcome Ofcom clarification on this. We also stand ready to work with Ofcom on better alignment of coverage data.

Annex 1: the impact of FWA on USO eligibility

The market for FWA has changed since Ofcom's 2016 evaluation

- 1.1. Ofcom's technical advice of December 2016 evaluated FWA as a means to deliver the USO. Ofcom considered that FWA would be able to meet all of the USO criteria presented at that time.
- 1.2. However, the analysis considered that FWA would be more expensive than fixed networks – based on the availability of spectrum, and the cost of building new base stations.
- 1.3. The market and usage have changed considerably since that evaluation – and it will continue to do so, as illustrated in Figure 7 below. The availability of 4G has increased considerably, the Government has launched new initiatives to drive coverage further, and more spectrum is expected to be auctioned over the coming years.

Figure 7: Changes in Mobile coverage since 2016



Assessing volume of premises that can be addressed by FWA solutions.

- 1.4. We have assessed where Fixed Wireless Access could be used, by starting with information on fixed network availability. Information from Openreach is coupled with BT assessment of the location of competitor networks - based on public domain information. From a combination of both Openreach and competitor network information we derive a view of which premises in the UK could not meet the USO technical specification from a fixed network.
- 1.5. Future network rollouts beyond current Openreach plans are not included in the assessment (for example we do not consider what the effect would be if BT were the successful bidder for the R100 initiative in Scotland). Similarly, we have no knowledge of future deployments by competitor networks other than the public announcements of overall planned rollout volumes. Both of these sources of additional infrastructure build will increase the number of premises that meet the USO requirement with a fixed network.
- 1.6. Beyond the assumed footprint of fixed networks, existing 4G mobile networks also provide the capability to deliver a >10Mbps downstream service. They meet the other USO technical specifications, including latency, upstream capacity and the need for data packages of at least 100GB per month.

- 1.7. We have taken the number of premises that we predict cannot receive a USO compliant fixed network offering and assessed the coverage that can be achieved from the EE network. We have not assumed any new site build to meet the USO requirement. Due to the capacity requirements that an FWA product would place on the network, we have not included the coverage provided by our 800MHz spectrum holdings in the assessment of USO provision, relying on the higher capacity 1800MHz radio layer for the FWA service. Where necessary we have assumed that an external antenna will be fitted at the customer premises to expand the coverage area.
- 1.8. Using this approach our estimate is that 75-80% of premises that cannot receive a USO compliant service from fixed networks could be served by FWA from the EE network.
- 1.9. Where available, FWA consumers are assigned to capacity on existing base stations that is not currently used by traffic generated from mobile devices. If capacity upgrades are required, these follow the path of deploying additional spectrum. The assessment of the need for a capacity upgrade is more stringent than the 50:1 contention ratio that forms the USO requirement.
- 1.10. Other mobile operators also provide coverage and capacity in rural areas. If the coverage provided by those networks was added to the coverage available from EE, along with unused capacity available on those networks in areas of low mobile usage, the number of consumers unable to receive a USO compliant service would reduce further.
- 1.11. Finally as with all of our estimate and modelling, our proposals are based on the best information that we have available today. We would expect all data to be updated as more information becomes available.

Annex 2: Funding a broadband USO via a cost sharing scheme

2.1. In this Annex, we consider how Ofcom could use a formal cost sharing industry fund to meet the net cost of the USO. BT envisages that a process along the following lines is needed if an industry fund is to be used, and that these steps should be addressed in the next Ofcom consultation.

Step	Comments
Before deployment commences	
1) As envisaged by DCMS, Ofcom to outline how the cost sharing mechanism is to work	<p>Ofcom to identify contributors to the industry fund - the "Relevant Parties" to the scheme.</p> <p>Ofcom to specify the basis of the levy.</p> <p>For sector fees, BT notes that Ofcom allows monthly payments, which could be an option for levies payable to the broadband USO fund.</p>
2) Ofcom to give a clear steer to industry on USO cost forecasts	<p>An approximate net cost of the USO should be forecast before work begins, and therefore the fund can begin on the basis of approximate cost to the industry.</p> <p>This will help contributors understand the scale of the financial impact and enable them to budget for contributions.</p>
3) Ofcom to set out how the fund is to be administered	
4) The fund administrator specifies the level of contributions and timetable for making industry payments into the fund	<p>The fund can begin before USP(s) submit costs as they implement the USO. There is no need for the level of contributions to match exactly the rate at which costs are likely to be incurred by USP(s).</p> <p>The fund is opened and first contributions are paid in by Relevant Parties. There is a positive balance now available for USP(s) to draw upon as they incur costs.</p>

Step	Comments
After USO begins to be deployed	
5) USP(s) submit reports to the fund administrator	<p>USP(s) records quarterly expenditure in delivering its USO and revenues earned from USO consumers, and the quarterly direct cost they have incurred.</p> <p>The fund administrator validates submissions and makes payments where these have been established to its satisfaction.</p> <p>Payments can be made retrospectively but should not be subject to long delays. BT would suggest payments from the fund every six months.</p>
6) The fund administrator makes repayments to USP(s)	<p>It is legitimate in the USO context for the fund administrator in calculating the net burden on the USP to take into account a reasonable return on the USP's direct costs of providing the universal service. Ofcom needs to provide clarity as to the rate of return to be applied. The fund administrator can make ex-post adjustments and make further payments from the fund or recover a proportion of payments already made where either the unfair net cost burden is not covered or has been overcompensated.</p>
7) Ofcom publishes its annual report on the USO as required by USD Article 14(2) setting out costs, revenues, other quantified benefits, and repayments.	<p>The Report provides Ofcom the opportunity to specify any adjustments to payments for broadband delivery. If the process works well, such adjustments should not be large.</p> <p>Ofcom may also wish to advise the fund administrator to review and change the level of industry contributions.</p> <p>The first annual report will be due in 2021.</p>
8) The process will need to be on-going and ends when net cost has been shared	<p>Process continues until the fund has compensated USP(s) for the net cost of USO. The process will need to exist for as long as USP(s) have capital employed which has not been recovered through the process.</p> <p>BT considers that this period should be as short as possible to relieve the debt burden on UPS(s) and to minimise Ofcom's and CPs' administrative costs. A fund that is in place, and incurring further administrative cost, for many years after deployment ought to be avoided.</p>

Annex 3: Ofcom Questions to CPs

Call for Expressions of Interest

- 3.1. Ofcom asks respondents to the expressions of interest document to cover three topics (geographic areas, approach and services proposed to deliver the USO and their capacity to deliver the USO). We have addressed these points in the main body of our response but for completeness we summarise our positions in this section.

Information required from prospective Universal Service Providers

Geographic areas

- 3.2. If designated BT would take a national view (excluding Hull) of the delivery of broadband to eligible USO consumers. Our preferred approach uses both our EE mobile network (using FWA), as well as Openreach's fibre broadband network (predominantly FTTP but some FTTC).
- 3.3. We urge Ofcom to take a local view of the provision of broadband services based on the footprint of other third party networks. We have suggested that where BT cannot serve an eligible consumer, and the consumer does not want to pay any excess charges above the cost threshold, then the consumer should have the opportunity to use other broadband networks. This could include providers such as Virgin Media, Gigaclear and B4RN, which networks may be closer to the consumer than BT, and so enable broadband provision under the broadband USO cost threshold.

Delivery of the USO

- 3.4. We recognise the complexity in managing the additional steps required to deliver a broadband USO. To that end we propose to set up a dedicated team to manage all aspects of the USO, the "Universal Broadband Support Group" (UBSG). This group would be the point of contact for consumer USO enquiries, whether or not the consumer is inside or outside the formal USO (see Section 5 of this response). The focus of the UBSG will be to ensure that each consumer is given clear guidance and support to obtain a universal broadband service within the shortest possible timeframe.

Technology and network build

- 3.5. Our preferred approach is to offer FWA to consumers and also to carry-out a proactive build of fixed broadband where a 4G service is not available:
- 3.6. All of the EE FWA product and the Openreach FTTC/FTTP products provide service above the broadband USO technical specification (see Table 1 for an overview of FWA capabilities; Openreach fibre product QoS is in the public domain).
- 3.7. We have provided a summary of the timeline for delivery of these services (see Figure 6 in Section 7 that shows the timeline of the options BT has considered). In summary they are as follows:
- **Preferred Option (FWA and proactive fixed broadband roll out)** – FWA is already available and any capacity upgrades required will be managed in advance as part of the normal planning process.⁵¹ We would request that Openreach build proactively to 40k premises with planning starting ahead of formal designation. Our ambition is for the proactive build

⁵¹ Under exceptional circumstances 4G network capacity upgrades may take longer where reasonable site access is not possible – for example where weather conditions may prevent access to certain sites for a prolonged period of time.

to reach as many of the 40k premises as possible during 2020; in any case we would expect the vast majority to be reached by the end of 2021.

- **FWA and reactive demand aggregation process for fixed broadband roll out** – same timeline for FWA but fixed broadband timeline delayed by at least 9 months (awaiting USO designation and for customer orders to trigger network build) and so could begin in 2020 and completion dependant on when broadband USO orders placed (but up to 24 months delivery from order placement).
- **Fixed first and FWA delivery** - the fixed solution can start to be provided from 9 to 18 months (progressive delivery) from mid-2020 and completion could be beyond 2023. This would cover around 300k premises (at an 80% take-up assumption) with a fixed line service. FWA would supplement this and would cover around 190k premises.

3.8. BT is very experienced in dealing with major network infrastructure builds and the timelines estimated above are based on our previous experience of extensive commercial and public funded builds. We would keep these estimates under regular review.

Quality of service

3.9. We would expect services provided to consumers by the UBSG to replicate the quality of service levels that we offer elsewhere in the UK on our commercial and publicly funded networks, including automatic compensation where appropriate (see Section 5 for details).

Pricing of USO connections and services

3.10. We expect our fixed broadband products to be priced in the same way under all of our proposals, whether proactive or reactive build under a broadband USO.

3.11. Demand for our FWA product (EE Home fixed wireless) is growing under current prices.

3.12. With wider take-up of the FWA product, we would expect to be able to evolve pricing. We would expect to pass on efficiencies of supplying this product at volume so that prices would likely fall. We therefore believe we can meet the affordability criterion and are happy to discuss this further with Ofcom.

Complaint handling procedures

3.13. The UBSG will deal with any disputes in line with our existing complaints policy and this will include the Alternative Dispute Resolution (ADR) scheme run by the Ombudsman for Communications Services. The UBSG would also compile statistics on the total number of enquiries, outcomes at each step of the process, and the number and outcome of any disputes.

Financial and governance arrangements

Corporate structure and management

3.14. BT has the expertise and experience to deliver large volume of broadband services. If designated as a USP, we would use the UBSG to manage enquires relating to the broadband USO.

Sources of funding

3.15. BT's preferred approach to funding is to provide FWA under commercial conditions and additional fixed broadband, and to recover Openreach fixed broadband costs via the next WLA market review process subject to consultation from Openreach with its customers. If we need to recover costs from a USO fund then we have concerns about the lack of information to date on how the fund would operate, and the timeframes for cost recovery (see Section 7).

Offices worldwide

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