KCOM's response to Ofcom's call for inputs to assist in the Designing the broadband universal service obligation

KCOM considers the work that the Ofcom has been commissioned to undertake in designing the broadband USO to be critical in arriving at a well-designed measure that provides a 'safety net' of provision to UK customers. We welcome the opportunity to provide input into that process and hope that the following submission is helpful.

We have a keen interest in this subject both as the current USO designate in the Hull area and as a supplier of network services to customers across the UK.[1] For these reasons the necessary USO 'burden assessment' is relevant for both the provision of our broadband services in the Hull area, as well as the potential contribution we may have to provide to support a wider USO obligation. Indeed, given the significant costs of meeting a UK-wide broadband USO we, like government, consider that it is important that any obligation is implemented in an effective, efficient and equitable manner. With this in mind the underlying cost benefit assessment will be critical in establishing the case for imposing the requirement, the operational parameters and the incidence of costs.

The Call for Inputs (CfI) stakeholder's views on six specific areas:

1. Specification and scope of the USO;
2. Demand for the USO;
3. Cost, proportionality and efficiency of the USO;
4. The universal service provider or providers;
5. Funding of the USO and potential market distortions; and
6. Review of the USO

Before providing responses to the questions related to each of the six areas we consider it worthwhile making a number of key points. Information contained in square brackets in both this and the following sections of the response should be considered confidential.

- First, it is our view that rather than examining the case for a broadband USO in isolation the assessment should form part of a broader review of full set of USO obligations.[2] Indeed, by undertaking a broader USO review of this kind

[1] We provide current generation and next generation broadband services to residential and business customers in: (i) the Original License Area (OLA), which accords with the Hull area and marks the geographic boundary for our USO obligations (and our regulatory (Significant Market Power (SMP) conditions); (ii) an expansion area covered by our network in the East Riding of Yorkshire; and (iii) the limited locations where we use BT inputs to supply a small consumer base and SMEs with current generation broadband and next generation broadband service.

[2] See for example, MCA (2010), *Ensuring Universal Access to a Broadband Connection*
A review of the definition of functional Internet access, within the context of the Universal Service requirement, MCA/10/49/C, 14, September 2010, available at:

Government will be better informed in the resulting 'burden' assessment and is likely to result in more efficient use of funding to meet the resulting USO obligation(s).[3]

- Second, it is important that the policy instruments (both on the supply-side and demand-side) at Government's disposal are used in a consistent and coherent manner.[4]

- Third, the net burden assessment provides an objective method of assessing the impact of the specified form of USO on the universal service provider that is designated either directly or through a competitive process.[5] In our view, this assessment is likely to result in the recognition that a funding gap exists in meeting a UK-wide broadband USO at download speeds of 10Mbit/s, which will have to be met by one or more parties to the delivery of the objective i.e. industry, Government, and end users. While Government has expressed a preference that the funding gap is met by industry we consider it important that the Government recognises that there is a clear case for the state to contribute where the rationale for closing the gap is socio-economic in nature. Specifically, to correct the identified market failure (positive externalities) and/or to pursue an equity objective (social inclusion).

- Forth, the decisions taken about the qualifying performance parameters of 'functional internet access' will have a direct impact on the cost of USO coverage.[6] The government has been clear in setting out its rationale for intervention that the USO is designed as a 'safety net' to provide access to a minimum baseline of services at affordable prices. For example, the government considers that the intervention should ensure that households are able to get online and use social media, being able to stream music videos, and to be able to access local and public services. The specific performance requirements should therefore:

  (i) be service-orientated, supported by a technologically neutral approach. In practice, Ofcom could draw on the evidence base, including SamKnows

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https://www.mca.org.mt/sites/default/files/attachments/consultations/2012/uso-broadband-cons-sep10.pdf

[3] This is particularly true if Ofcom were to be given the flexibility to remove/modify other outdated USO obligations to better reflect the evolving technology landscape and changing consumer preferences. For example, Ofcom have recognised a declining reliance on other elements of the USO (payphones, directories, directory enquiries). If the costs of providing superfluous elements of the USO were removed this would obviously be reflected in the net burden assessment.

[4] The use of a USO has traditionally been viewed as a complement to, rather than a substitute for, other forms of intervention (e.g. the use of State aid to support the deployment of 'superfast' broadband (i.e. capable of delivering download speeds in excess of 30Mbit/s)) given the impact it has on investment incentives. Similarly, rather than a reactive programme (i.e. 'on demand') government's including the UK, US and Korea have used demand side programmes (e.g. SME connection vouchers) to actively encourage take-up amongst particular target groups.

[5] A burden assessment provides a helpful framework to assess the impact of meeting a USO obligation, whether we operate under the requirements of EU law, or not.

[6] Additional elements relevant to the scope of the USO will also impact the cost. For example, it may be appropriate to exclude certain categories of premise from receiving USO support e.g. holiday homes (as is the case in Finland. See https://www.viestintavirasto.fi/en/internettelephone/righttoatelephoneandbroadbandsubscription/rightto1Mbpsbroadband.html).

research[7], to advise government on the qualifying capabilities that could be used to deliver the functionality they consider essential to permit households to effectively participate in society and business to operate; and

(ii) reflect common forms of functionality rather than extreme use cases that might be particular to specific households, or businesses. This approach serves to target the intervention at the identified market failure/distributional concern.

- Fifth, the qualifying conditions for the 'affordability' under the USO need to be considered carefully as it presents the prospect of undermining existing investments/planned deployments.

- Sixth, the timing of the USO intervention is important:

  - At an industry-wide level any decision to set an implementation date before 2020 is likely to have unnecessary cost impacts. Communications Providers have indicated that they have near term deployments plans in marginal areas (i.e. the final ~5%). As noted above, it is important that these private sector investments are not undermined by the implementation of a USO.

  - In 2012, we made a commitment to upgrade our current generation access network by investing in a next generation fibre access network in the Hull area and in the parts of the East Riding of Yorkshire we currently cover. We are in the process of deploying this network, based predominantly on future-proof ultrafast FTTP technology, to all the homes and businesses in these areas and have committed to ensure its availability to three quarters (150,000) of the premises covered by our current network footprint by the end of 2017.[8] Furthermore, we expect to have completed this fibre deployment by the end of 2020. This capability:

    (i) will have reduced the total number of 'on net' customers unable to obtain minimum 10Mbit/s broadband service by [✂] before the end of 2017;[9] and

[7] SamKnows could use its 'whiteboxes' to field test the ability of various technologies (includes the use of fixed line, wireless, (https://www.samknows.com/consumer) and satellite (https://signups.samknows.com/esa/)) to deliver these services, recording a common set of performance metrics including, for example: speed of download and upload speed, jitter, latency etc.

[8] In a small number of cases, we have used fibre to the cabinet (FTTC) to make available 30Mbit/s+ broadband services to customers, and may keep these existing deployments for some time before upgrading to FTTP. While our default preference is for the deployment of FTTP, no decision has yet been taken on the form of fibre-based deployment for the ~50,000 premises that form part of second phase of fibre deployment out to the end of 2020.

[9] [✂]

(ii) provides our residential and business customers with a step change in access capability providing minimum speeds well above those envisaged by the new USO. Moreover, it offers access to those speeds at an affordable connection charge and at fair monthly prices.

- An implementation date earlier than 2020 is likely to require us (should we be designated) to either change our network planning to meet requests 'on demand', or otherwise move our plans forward.[10] Revisions of this type have operational and cost implications that would need to be factored into the burden assessment. This could result in a net cost calculation that required industry/government contributions that might not otherwise be necessary if the USO obligation came into effect after that date.

- Seventh, while recognising that universal service is not the same thing as universal access it is still important to consider whether it is appropriate when delivering the former to require the Universal Service Provider(s) to meet 'reasonable requests' for wholesale access on transparent, fair and non-discriminatory terms. Conditionality of this form would fall short of the compatibility conditions required where State aid is used but reflects the fact that industry/public compensation is required to deliver baseline services to customers that would not be served on a commercial basis.

Finally, responses to Ofcom's CfI will provide a valuable contribution to Ofcom's submission to government on the design of the USO. However, we consider it important that Ofcom also consult separately on the implementation of the expected Universal Service Order (the 'Order'), which will specify the precise form of broadband services that must be provided throughout the UK. Importantly, we expect this consultation to include, amongst other things, the burden assessment.

Ofcom CfI questions

1. Specification and scope of the USO

How should the minimum technical performance of the USO be specified?

Ofcom consider that a minimum download speed 10Mbit/s[11] to be the appropriate level at present for a broadband USO[12] and is seeking stakeholder's views on this, as well as which other aspects of technical performance should be specified and at what level.

[10] By example, where we are yet to deploy fibre-based access infrastructure we apply a connection charge of £2,000 to business customers. (We do not offer this Lightstream extension service to our residential customers, who must currently wait for our deployment to become available in their area. At which point the standard connection charges (£40) apply.
[11] Ofcom note that the download speeds represented here are known as *line speeds*. For services based on the traditional telephone network, they are the stable speed of the link between the consumer's home or office and the street cabinet/exchange and are sometimes referred to as *sync speeds*. For cable networks broadband, or all-fibre networks based on FTTP, they are the speeds configured in the network equipment that are determined by the service the customer has contracted for. They are a better indication of the performance actually experienced by consumers than *headline*

We agree with Ofcom that the minimum download speed of 10Mbit/s is an appropriate lower bound at present for the USO. We also consider an upload speed of up to 1Mbit/s would be similarly appropriate. In addition, we would expect the broadband service to have the baseline performance characteristics (latency, jitter etc.) to ensure households and business are able to operate effectively online (i.e. to have access to the capability envisaged by government).

It is clear that the acceptability of user experience is in significant part determined by how residential and business customers make use of their broadband connection. For example, some business customers may wish to consider symmetric 10Mbit/s connectivity the minimum level of internet access to operate effectively. Some residential customers may make limited use of upload links but consider other elements important in their internet use, with multiple members of a family using the internet to access real time entertainment at peak times. Given the purpose of the USO it is important that the performance characteristics proposed by Ofcom represent averages rather than extremes and the parameters. This approach is likely to deliver a better cost benefit outcome in providing the baseline broadband capability, rather than providing higher grade capability that is likely to provide more limited social value.[13]

We consider it important that the delivery of these baseline service are targeted at qualifying premises and that the broadband services supplied then actually provide the relevant baseline speed and quality of service standards[14]. A common measurement methodology clearly helps on both counts.

Finally, should Ofcom chose to use a competitive tender arrangement as a method of delivering part/all of the broadband USO Ofcom will need to specify the minimum performance parameters (e.g. not only by reference to theory and technical standard, but also evidenced by calibrated performance measurement). It may even wish to consider the pre-qualification of prospective Universal Service Provider(s). For example by seeking evidence of:

- an existing/equivalent deployment that is capable of delivering the required performance parameters within a similar geographical environment;

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speeds, which are theoretical maximum speeds that are often not achieved in practice. See footnote 16, p. 15-16, Ofcom (2015), Connected Nations 2015, 1 December 2015, available at;
http://stakeholders.ofcom.org.uk/binaries/research/infrastructure/2015/downloads/connected_nations2015.pdf

[12] Ofcom (2016), *Making communications work for everyone: Initial conclusions from the Strategic Review of Digital Communications*, Statement, 25 February 2016, pp. available at:
http://stakeholders.ofcom.org.uk/bina...sion/summary/digital-comms-review.pdf

[13] To the extent that there is a clear case for supporting more advanced capabilities either because of the General Purpose Technology (GPT) properties or to support the requirements of specific types of technology-based SME's government may wish to consider the economic business case for using either supply-side measures to support NGA-based superfast broadband deployments, or otherwise using tailored demand-side measures in the form of SME vouchers.

[14] Ofcom is aware there is difference between the line speed and the speeds actually experienced by customers. Certain sub 10Mbit/s premises exist because of issues caused by customer equipment, interference, etc. that are on the customer side of the network demarcation point. As such, these issues are beyond our formal control of communications providers. This illustrates an important definitional and practical issue in identifying qualifying premises

- how the solution would adapt to maintain the capability and end-user experience where there are changes to key parameters such as increased take-up in the relevant serving area/ increased demand for capacity in that area, and be able to show how that is technically viable and economically sustainable; and

- the longevity/scalability of the solution in being able to support expected increases in performance requirements within a specified period of time.

How should Ofcom ensure the USO is affordable?

Ofcom is considering how they might best ensure the affordability[15] of universal broadband, which might include requirements for universal pricing of broadband services or caps on charges and is interested in stakeholder's views.

In setting out our considerations on affordability we note the distinction between affordability as a consumer concept that is framed in terms of social exclusion, as opposed to the role connectivity plays in an SME's business model. [16]

At present all consumers and business customers in the UK have the legal right to obtain a basic telephone services (including functional internet access) and to do so in a manner that ensures they can afford access to that service and retain it by meeting ongoing charges. In other words, there are two dimensions to the notion of affordability in this context: the cost of obtaining a connection and the ongoing monthly charges for the baseline broadband service. We take these in turn below.

As the current USO designates, we and BT are required to provide a connection upon reasonable request and to do so at uniform prices, irrespective of the geographical location.

We apply a standard charge for connection of basic telephony services (including our basic broadband package). Unlike BT we do not apply a cost threshold for installation over which customers must pay the excess costs in addition to the standard connection charge (households pay a standard connection charge to BT, the universal service provider (USP) charge for nearly all of the UK, of £130[17]). While we do have instances where these construction costs are large they are relatively uncommon and as such have taken the pragmatic position that they net out under the burden assessment so do not currently charge for non-standard basic telephony connections. This differs to the BT case whose national coverage (outside the Hull area) means their USO obligation requires them to meet reasonable requests to provide basic connectivity in remote rural areas, as well as to premises in other challenging geotypes where BT might not

[15] Ofcom has defined affordability as: "a good or service is considered to be affordable for a consumer if the consumer can purchase it without suffering undue hardship." http://stakeholders.ofcom.org.uk/market-data-research/other/cross-media/affordability/
[16] *Ibid*, para 3.14, pp. 9-10.
[17] Ofcom (2016), *Designing the broadband universal service obligation*, Call for Inputs, 7 April 2016, para. 1.20, p. 6.

otherwise serve as there is no commercial case for deployment.[18]

As noted previously, we are in the process of upgrading our current generation access network, which is currently used to supply residential and business customers with basic telephony services and broadband (ADSL2+) both in the Hull area and in locations in the East Yorkshire of Riding.

Our network transformation programme, which will be complete no later than end of 2020 will comprise largely FTTP, but some FTTC, next generation access network (NGA) technologies. Currently[19], these have the following charges applying:

- Our entry level Lightstream Home service has a £40 connection fee, provides speeds of up to 5/50Mbit/s (upload/download), has a 70GB monthly download allowance, and costs £36.99 (including VAT and line rental) per month.

- Our entry level Office Light 250 (FTTP) business broadband service has a connection fee of £120, provides speeds of up to 125/250Mbit/s (upload/download)[20] and has a 150GB monthly download allowance, and costs £40 (excluding VAT and line rental) per month.[21]

Hence, by the end of 2020 we expect that every residential and business customer (both in the Hull area and where our network is available in East Yorkshire) would be able to connect to our NGA fibre network. This will ensure universal services are available at superfast/ultrafast broadband speeds, with common standard connection costs and uniform monthly prices.[22] Therefore, it is likely that those on-net areas that are currently unable to obtain baseline broadband services will benefit from a fibre upgrade without the need to impose a USO.

To the extent that there is a case for designating KCOM with a broadband USO in the Hull area turns on the case (i.e. burden assessment) for ensuring that the baseline broadband services are available within a shorter specified time period than our expected Lightstream deployment horizon, they are made available at affordable prices, and are accessible to remote and vulnerable groups.

[18] In BT's case, where installation of a new line costs £3400 or less, BT sets a standard charge. Where installation will cost over £3400, BT requires the customer to pay the excess costs (plus its standard connection charge).
[19] Our product portfolio is currently being reviewed and both connection charges and monthly rentals may change.
[20] The 'up to' upload/download speeds are the headline speeds that the business customer will receive for the majority of time. The 'minimum committed speed' that the customer will always receive is 15/60Mbit/s (upload/download).
[21] As noted in footnote 7, in a limited number of cases where our deployment uses FTTC technology we have offered our FTTC Lightstream Homeworker 50 product which has a connection fee of £120, provides speeds of up to 5/50Mbit/s (upload/download) and has an 80GB monthly download allowance. The connection is subject to a peak contention of 50%. Given VDSL technology is distance dependent the actual speeds obtained will be specific to the premise taking service. We provide location specific performance figures to individual customers when they enquire. In areas served by our FTTC deployments no higher speed alternatives are currently available to customers.
[22] To the extent that these charges are revised as a consequence of product portfolio reviews we currently expect that on-net customers would be charged common rates.

The USO burden assessment would provide Ofcom with a vehicle to assess the costs of requiring the provision of an 'affordable'[23] low user scheme to residential customers. In particular, the assessment would need to take full account of the revenue impacts of any decision to specify the form of a subsidised residential low user scheme (e.g. an 'emulated' baseline product[24]) should no decision have been made to make one available commercially. Indeed, that calculation would need to clearly identify whether it was Ofcom's expectation that a low user scheme was being required for the relevant area as a whole, rather than incremental locations where no baseline services were available at the point of the USO coming into force. Similarly, Ofcom would need to clarify any specific terms applying to SME pricing to ensure accessibility of services and to recognise the revenue impacts of any such requirements.[25] In both instances, the burden assessment would need to recognise the potential need for sectoral funding and cross-subsidy to support both the deployment costs and any lower ongoing charges brought about by the introduction of a low user requirement.

While not pre-judge a USO burden assessment, it is clear to Ofcom that there are already residential and business customers choosing to take Lightstream superfast/ultrafast services in the Hull and East Yorkshire areas and are willing to pay for them. We have had no customers arguing that the price of Lightstream is unaffordable (either in terms of the connection charges or ongoing pricing), nor have we had customer requests asking us to introduce either a low user scheme. We would therefore be concerned if a broadband USO was being used to ensure that superfast/ultrafast services should be made universally available at artificially deflated prices in Hull and East Yorkshire. Moreover, this concern would apply in equal measure to interventions in the rest of the UK as it is likely to place a heavy burden on the sector.)

Should there be a social tariff for broadband services?

Fundamentally, this question turns on the purpose of the broadband USO and the way that accessibility is framed. Specifically, if the intervention case is based on the need to ensure social inclusion by, in part, ensuring that low income and disabled consumers can get online and access public services etc. and the costs of connection/monthly charges represent a barrier then there is a case for requiring these packages. Clearly, these measures impact the business case for service deployment and for this reason need to form part of the net burden assessment.

[23] Similarly, the notion of 'affordable' NGA-based broadband services (i.e. capable of delivering speeds in excess of 30Mbit/s) is specified in BDUK's 2012 State aid decision, where the government's view was that access to this capability was not considered affordable if the installation cost was £200+ and/or the monthly price was £50+. See, , European Commission (2012), *State aid SA.33671 (2012/N) – United Kingdom National Broadband scheme for the UK - Broadband Delivery UK*, 20 November 2012, paragraph 20, footnote 26, p. 6, available at: http://ec.europa.eu/competition/state...cases/243212/243212_1387832_172_1.pdf

[24] The individual end user could then in turn chose to 'upgrade' to faster speeds given the underlying technology was scalable

[25] Ofcom (2016), *Quality of service in telecoms: Residential consumer and SME experiences of quality of service in fixed line, broadband and mobile telecoms*, Jigsaw research, February 2016, available at: http://stakeholders.ofcom.org.uk/bina...aw_quality_of_service_in_telecoms.pdf

In Spain for example, the broadband USO includes the requirement to provide a social tariff targeted specifically at low income groups. This 'Social Feed' is available to consumers at predetermined income threshold that provides a 70% discount on installation costs and a 95% reduction in the monthly charge. However, strict eligibility criteria apply in order to target specific vulnerable groups. It therefore requires qualifying information to be supplied by the customer on state benefits (e.g. pension and welfare payments) as well as the customer's tax position. The scheme also limits the number of qualifying customers by ensuring that access to the Social Feed is only available at one property per customer.

In the US, there have been a number of publically funded schemes that target specific target low income groups in public housing. For example, Google has previously provided a free low user 1Mbit/s/5Mbit/s (upload/download speeds) broadband service for selected public housing and did so by applying a standard 'on net' connection fee of £200.

2. Demand for the USO

What might the potential demand be for the USO be?

Ofcom's Connected Nations report highlighted that around 2.4million (over 8%) premises could not receive a speed greater than 10 Mbit/s in mid-2015, with around 1.5 million (48%) premises in rural areas affected. This poor rural availability disproportionately affects Scotland, Wales and Northern Ireland as they are more rural than the UK as a whole. Importantly, the combination of BDUK's superfast broadband intervention programme and continued private investment will reduce this number further. In particular:

- BDUK has now received EU clearance to use up to £500 million of new State aid that can be used before the end of 2020 to support the deployment of affordable superfast broadband[26], in addition to the use of existing Stat aid that has been clawed-back under the terms of the current State funded interventions in the 'rural' 'final third' of the UK. There have also been investments;

- The UK may review the use of State aid to support the deployment of affordable superfast broadband in 'urban' locations over the course of the coming years thereby addressing the majority (around 52%) of premises currently unable to obtain baseline 10Mbit/s services;

- Measures being implemented by government and Ofcom will help to support the current and near term investment plans of private sector companies, which could deliver baseline services to marginal areas that cannot currently

[26] European Commission (2016), *SA. 40720 (2016/N) – National Broadband Scheme for the UK for 2016-2020*, 26 May 2016, paragraph 183, available at: http://ec.europa.eu/competition/state...cases/263954/263954_1760328_135_4.pdf

obtain them.

In fact, DCMS estimates that by the end of 2017 the deployments outlined above will have reduced the number of premises unable to obtain minimum 10Mbit/s broadband services materially but will still leave 1 million households (and 100,000 premises in remote rural areas) unable to obtain that baseline service at that point in time. However, given the measures highlighted above we would expect the number of premises able to access those baseline services to fall further still over the near term (i.e. by the end of 2020).

As Ofcom note, the demand for the USO could depend on the technology used to deliver the service, the technical specification – including the speed it is capable of delivering – and the pricing.

We estimate that there are at present [✂] 'on net' premises in the Hull area that cannot current obtain broadband services above 10Mbit/s but we currently expect that to fall to zero by the end of 2020. We would expect demand to vary by specific area and will in part be will be in part a function of qualifying criteria (i.e. willingness to pay, eligibility under any low user/social tariff). However it will also be affected by a range of other non-price factors. For example, some customers may not make chose not to make use of the USO as they do not have the requisite equipment (e.g. PC) or skills to benefit from the facility. In our view these price and non-price factors will govern the decision to take broadband services rather than technology concerns. Our network provides the requisite performance parameters to deliver all of the services envisaged at this point in time under the USO. Furthermore, it offers the potential not only to deliver current baseline services but is easily scaled to meet the medium and long term requirements of subsequent uplifts to the USO, for both residential and business customers.

In terms of delivering the broader UK-wide broadband USO, we wish to see this delivered in the most efficient manner. A technologically neutral approach will assist in this delivery as it is likely to permit the most cost effective technology to be used to meet the challenges of the particular economics of an area, whether this presents itself in difficult geotypes, or a small addressable customer base. In principle, if a given technology is able to meet the parameters set by the broadband USO then it should be capable of use. Furthermore, if it offers the baseline capability at the lowest level of compensation, then all other things being equal it will be the most efficient method of delivering the broadband USO. Clearly this doesn't preclude a customer from requesting another technology to deliver its broadband services by a non-USP if that customer had a preference for it but that should not be available under the terms of the broadband USO.

In addition to our evidence and that provided by other stakeholders, Ofcom may also wish to consider reviewing the evidence that BDUK has available to it, including the customer surveys (e.g. take-up, customer satisfaction etc.) conducted as part of their market test pilots. These sponsored interventions include a number of NGA-based superfast technologies, including FTTx and Fixed Wireless Access (FWA) as well as the trialing of high-speed satellite capabilities.

BDUK's market test pilots have addressed a significant number of premises not previously able to obtain 10Mbit/s services in similar 'rural' locations and their basic broadband market tests are reportedly supplying broadband at headline speeds using satellite technology at speeds above 10Mbit/s.[27] The emerging findings will help inform Ofcom's understanding of demand by technology as well as their respective performance in final 5% areas, which will share many of the same characteristics that the broadband USO will need to deliver to. .

3. Cost, proportionality, and efficiency of the USO

What are the likely costs of provision of the USO to household using a range of technologies capable of delivering 10Mbit/s, how these costs are likely to vary depending on specification and over what timescales the costs of provision might be spread?

The areas across the UK currently unable to obtain 10Mbit/s broadband services comprise a disparate group of fragmented locations. They vary from dense areas in the City of London to low density rural locations in Devon and remote Scottish Islands. Each of these locations has its own particular characteristics that will make some technologies less economic than others. The issues in these locations arise from factors operating on both the demand and supply sides. For example, in some rural and remote locations prospective suppliers could face low levels of permanent occupancy (e.g. second homes), with low population overall residential density and few businesses. This combination of factors could therefore present a potentially small addressable market with significant revenue risk, requiring very high take-up rates to support the deployment case. Similarly, on the supply-side coastal or mountainous locations can present challenging topographic features that are costly to navigate for fixed networks. Equally, it may be difficult to get obtain wayleaves and/or siting rights for switch/mast equipment presenting similar challenges, whether in urban or rural locations.

For the above reasons, it is likely that delivering the current broadband USO is likely to require a range of technologies, with cost structures driven by the economics of density. However, while there may be a number of alternative technologies that are capable of meeting an appropriately specified 10Mbit/s broadband USO this may not be the case over the long term as the baseline provision changes.

What are the typical costs per home connected of a range of technologies and how might the costs be affected by using shared network deployments or building on existing infrastructure?

In our experience the initial costs of FTTP deployments were broadly consistent with the figures widely publicised, with the costs per premise passed in the [✂]. However, over

[27] DCMS (2016), *Emerging findings from the BDUK market test pilots*, February 2016, available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/497370/Emerging_Findings_report_Annex_A_-_Individual_project_summaries.pdf

time and with experience and input costs falling this has fallen to an average of [✂] per premise. There have been, and continue to be, technology developments that are impacting the deployment costs. This includes copper enhancement technologies and development in mobile and satellite technologies. Collectively these have the potential to reduce the costs of per home connected and hence the efficiency in meeting the baseline broadband USO.

Clearly, while the Hull and East Yorkshire areas are not representative of the hardest to reach rural geographies the reference costs will be helpful in understanding the costs of urban environments. Indeed, a significant proportion of the locations that cannot currently obtain 10Mbit/s baseline broadband services are in these locations.

While in principle some locations could benefit from shared infrastructure models, which present the prospect of lowering overall deployment costs. However, in practice it is not clear that the UK market sees the business case as compelling. There are examples of facility-based competition being used to deliver superfast services in some locations (using BT inputs either in the form of PIA (or the potentially revised Duct and Pole Access remedy), or PIA Plus (operating in State aid intervention areas in the 'final third' of the UK)[28]) and the new regulatory measures introduced in the BCMR offers the prospect of supporting mobile delivery of the USO. Similarly, the broadband cost reduction directive[29] could be used to support high-speed services offering capabilities above the baseline USO and there is nothing to prevent commercial negotiation of passive access in order to deliver basic broadband services.

In addition to industry input, Ofcom might benefit from access to any modelling work that BDUK has undertaken to assess the likely costs of deployment in the hardest to reach parts of the UK.

What are the possible benefits of providing the broadband USO, and how any net costs calculation should be made where a network may be shared among multiple end customers (both USO and non-USO), and where the USP may be able to offer a range of retail products beyond just a 10Mbit/s connection?

The net cost calculation for a broadband USO requires an assessment of the total avoidable costs of uneconomic activities (i.e. the activities which do not make a positive contribution to overall financial performance of the provider) less the total revenue forgone (i.e. the direct revenues from uneconomic activities and the indirect/intangible benefits arising from ubiquity (e.g. branding benefits and customer lifecycle effects).[30]

[28] BT is already required to provide a duct and pole access remedy, which is does in the form of its Physical Infrastructure Access (PIA) product. In addition, BT is also required to provide PIA Plus in State aid areas where it has won contracts. In these case: (i) where its deployments are incremental builds it provides duct and pole access to support the deployment of all forms of services (i.e. including leased lines) under the provision its primary use was the scale delivery (i.e. mass market) broadband; and (ii) where it deploys new infrastructure allows for duct and pole access, without restriction.

[29] *DIRECTIVE 2014/61/EU OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 15 May 2014 on measures to reduce the cost of deploying high-speed electronic communications networks*, available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0061

[30] In addition to these effects certain technologies may benefit from wider acceptance of their capabilities and hence increase their competitive advantage on the wider market.

4. The Universal Service Provider or Providers

How should the USP be designated?

As Article 8 of the Universal Service Directive requires, the UK must use an efficient, objective, transparent and non-discriminatory designation mechanism whereby no undertaking should be excluded *a priori* from being a/the Universal Service Provider, and the USO must be delivered in a cost effective manner. This approach is intended to help minimise market distortions and enhance efficiency. On the basis that a provider is able to deliver the requirements of the USO then it should be eligible for participation.

While complex, in our view there is a clear case for an explicit calculation of the cost of the broadband USO. This would make explicit what is being provided by the designated USP(s). Under the current arrangements there are potentially basic telephony services at fixed locations that would be provided by the existing USO designates. However, these services may become less economic to support (impacting the net burden assessment) where customers choose to use broadband services to meet certain aspects of their connectivity needs e.g. using VoIP services. The imposition of a broadband USO could therefore threaten investments by the basic broadband designate as their ability to recover (already loss making assets) is weakened further. This is because a consumer is less likely to want to maintain their own landline, or will reduce the revenue stream paying for the fixed asset base.

In our view the USO burden assessment should be undertaken in the round. Indeed, this is already envisaged with the relative concept of 'functional internet access'. However, if the decision is to separate the two assessments there is clear case for reviewing both at the same time.

5. Funding the broadband USO and potential market distortions

How could any potential market distortions of competition be minimised?

Where there is no net burden it is clear that the funding of a broadband USO should fall to the relevant USP. However, where the there is a net burden there is a clear case for funding this through general taxation and given the nature of the intervention this is likely to be the least distortive method of funding it. To the extent that it is appropriate for industry to contribute to the delivery of broadband services to the least economic areas it seems appropriate that those firms that will benefit from the provision should contribute to the fund.

In addition to obtaining competition in service supply we do think that it is worthwhile considering whether it is appropriate to require USPs to also meet 'reasonable requests' for wholesale network access.

6. Reviewing the USO

When, and on what basis, should the USO be reviewed?

The notion of 'functional internet access' under the current USO provisions is a relative concept and implies the requirement for periodic review to assess whether the level and form of USO service provision remain relevant and appropriate. However, predicting what a baseline level of service will be at a specific point in the future as operational parameters change is a difficult task. However, given there will be investments being made in the delivery of baseline services it is important that some degree of certainty is provided. For this reason, one possibility is for the review periods to coincide with a defined term of USO designation. This need not be set on a constant cycle but it is important for the purposes of investment and helping to guide market expectations.

Ofcom could use its annual planning exercise as an opportunity to present key monitoring information/market intelligence on the use of broadband capabilities if the baseline looked to be changing in a dramatic way and the services being offered were failing to meet the socio-economic objectives of the USO. Given Ofcom consults on its draft annual plan presentation of this evidence would provide an opportunity for representations to made at that point in time as to whether a broadband USO review as necessary.