



## Designing the broadband universal service obligation: Call for Inputs

### Summary

The Call for Inputs (CFI) presumes that a prior question has been resolved: that there is a case for a Universal Service Obligation (USO). This may be so, but it should at least be examined. If, as seems to be the consensus, the USO is about providing a safety net to ensure economic and social participation in society (rather than an insistence that all must have the *same* prize) then the means to achieve this are already ubiquitously available in the UK today.

If the case can be made for upgrading the USO, we should learn lessons from the flawed BDUK intervention. BT has been subsidised to provide superfast broadband to postcodes that it would have covered anyway; and some local authorities have compounded this error by continuing to put public money into areas where Virgin Media (and others) intends to provide services. Accordingly, any USO intervention must exclude postcodes that will be served 'by the market' within a reasonable timeframe.

A speed of 10 Mbps per second is more than adequate to deliver the services required to participate in society. It is currently inadequate however to enable every household to stream *Game of Thrones* episodes in 4K, but this should not be the purpose of a USO. Furthermore, it seems that given the enormous attention to developing techniques for efficiently compressing video, 10 Mbps should be sufficient for many years to come.

We believe that BT will have the technical capability — using Long-reach VDSL — to meet a USO of 10 Mbps and that doing so, given certain conditions, would not require it to shoulder an 'unfair burden'; the test that Ofcom is required to apply. These conditions should include a requirement for the existence of a minimum expressed demand before BT is required to upgrade or install a cabinet, and a maximum cost per premises connected for those that require BT to perform additional 'construction' at or to a premises.

Under this arrangement, BT has an incentive to minimise the cost of meeting its obligation *and* to persuade as many as possible to upgrade or sign up to its service; thereby enhancing the externality benefits which should underpin the justification of a USO. And, if the price of GEA is not regulated, BT will have a strong incentive to develop its technology to provide superfast broadband.

Those in the most far-flung areas that BT is not obliged to supply under the USO can choose to use satellite services; perhaps with the cost of a dish partially met through the continuation of a state-funded voucher scheme.

## Introduction

1. In the recent publications of the DCMS and in Ofcom's Call For Inputs (CFI) there is an implicit assumption that a modification to the Universal Service Obligation is required. In the Digital Communications Review Ofcom supports the introduction of a new USO and is even explicit about some of its minimal technical characteristics [*"we have suggested previously that the minimum broadband speed should be increased, perhaps from 2Mbit/s to 10Mbit/s"* paragraph 1.29]. In this section we pose and examine the necessary prior question: whether this assumption is valid, given the purpose of a USO and the, current and future, availability of broadband services in the UK.

### A broadband USO – what is the problem?

2. A Universal Service Obligation (USO) is an intervention that requires a Universal Service Provider (or providers) to 'do something' at a cost that it would not choose to bear if left to its own devices (otherwise there is no need for a USO). In the past, the Universal Service Order has resulted in a requirement for BT (and KCOM), to provide, amongst other things, "functional Internet access"<sup>1</sup> to all, subject to a cost ceiling of £3,400 per premises where installation costs are above that amount. Before condoning an upgraded obligation for the 'broadband age' (and a plethora of implementation 'issues') it is prudent to ask: 'what problem is the putative revised USO trying to solve?' and consequently: 'to what extent has the 'problem' already been solved?
3. In the CFI Ofcom notes that, in November 2015, the Government set out its intention "*to introduce a broadband universal service obligation (USO) to provide a 'safety net' to make sure that households and businesses can get the broadband speeds needed to do business online, access key services or stream live TV*".<sup>2</sup> (Our emphasis).
4. Greater colour on what the USO is for is provided in the DCMS' A New Broadband Universal Service Obligation Consultation (March 2016): (with our emphasis).

*Many now see broadband as an essential service much like electricity and water. (page 2)*

*Digital inclusion is a priority for this Government. We want to give everyone the opportunity to be able to have access to the enormous benefits that can be gained from getting online. (page 2)*

*For individuals, this is about not missing out on chances to find employment, saving money on household bills, and being able to maintain contact with distant friends and relatives. It is about helping our children to do their homework and making sure that families can access a greater range of services, including public services, which are increasingly becoming 'digital by default'. It is also about getting*

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<sup>1</sup> Universal Services Directive, Article 4(1) and the Electronic Communications (Universal Service) Order 2003.

<sup>2</sup> CFI 1.1

*people in rural areas across the four nations of the UK online enabling them to access services, work, shop and communicate without the need to travel. The benefits of greater connectivity are shared throughout communities, including by supporting small businesses to get online, compete and grow. (page 2)*

*We know that a lack of access to broadband can result in sections of society being excluded from the social and economic opportunities provided by broadband. For individuals, this can mean missing out on chances to find employment or saving money on household bills. It can also make it far harder to maintain contact with distant friends and relatives. In addition to this, broadband connectivity can increase the number of leisure and education opportunities whether through children using it for homework, or adults pursuing training opportunities whilst reducing social isolation and exclusion from government services which are increasingly becoming 'digital by default'. (page 9)*

5. The justification for the USO therefore appears to be couched in terms of private benefits (saving money), economic externalities (finding employment, allowing small businesses to get online), social externalities (reducing social isolation and the need to travel) and network effects (staying in touch with distant friends or relatives).
6. This is broadly consistent with the historic justifications for Universal Service Obligations, although these appear to put greater emphasis on network effects and externalities (rather than ensuring that the private benefits of network access are fulfilled). The OECD has set out the rationale for universal service as follows:

*"Two of the economic factors taken into account when considering universal service include its direct effects on users of telecommunication services and on the broader economy. When a user joins a telecommunication network, existing subscribers benefit because they can now communicate with that user. ... [U]niversal service policies were often [also] justified based on social externalities associated with having a telephone service (e.g. ensuring widespread availability of the ability to call emergency services) as much as network effects.*

*In addition, the expansion of services may have broader effects throughout the economy such as boosting productivity, supporting economic growth, increasing the competitive edge of local industries, reducing energy consumption and increasing quality of life. ...*

*It has long been considered that being connected to telecommunication networks is necessary to avoid social exclusion and for people to participate fully in society. Access to telecommunication services is often viewed as a threshold for the exercise of social and political rights, participation in the economy and in social and cultural activities that enrich quality of life."<sup>3</sup>*

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<sup>3</sup> OECD, *Universal Service Policies in the Context of National Broadband Plans*, 27 July 2012

7. Along similar lines, Ofcom has said of the UK voice USO:

*“There are both social equity and economic grounds for USO. It provides services to help vulnerable customers and customers in remote and rural areas, whom the market might not otherwise choose to serve, allowing them to take their full part in the economy and society. In addition, all citizens benefit by having a larger telephone network; they can contact and be contacted by more people. Cheap communication also enhances economic growth.”<sup>4</sup>*

8. In reviewing the scope of the Universal Service, Annex V of the Directive<sup>5</sup> requires the Commission to take into account: (our emphasis):

- *Are specific services available to and used by a majority of consumers and does the lack of availability or non-use by a minority of consumers result in social exclusion?*
- *Does the availability and use of specific services convey a general net benefit to all consumers such that public intervention is warranted in circumstances where the specific services are not provided to the public under normal commercial circumstances?*

9. There is a clear consensus that the USO should be about having access to the set of services required for participation in society, and that any intervention to impose a USO should bring benefits to society. In the table below we consider whether access to various commonly used services, provided over a broadband connection, meet these criteria and, by extension, whether a USO should be specified in such a way that enables use of them. We also list the speed and bandwidth requirements of each service and discuss these in more detail in paragraphs 32 to 41 below.

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<sup>4</sup> Ofcom, *Universal Service Obligation: a review*, 2005

<sup>5</sup> 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) Annex V

Applications and USO <sup>6</sup>					
Application	Network effects	Social/Econ externalities	Downstream Bandwidth	Traffic	Comment
Email	✓✓	✓✓	Minimal	Low	Absent very large attachments, bandwidth req'ts are low (a viable application since dial-up)
Web use	✓	✓✓	3 Mbps <sup>7</sup> (or less)	Low	Enables much e-health, e-gov, home working, education, e-commerce etc
Video calling (high quality)	✓	✓	400 Kbps <sup>8</sup>	Low	Still relatively little used – just 9% of businesses use at least weekly. <sup>9</sup> Note speed needs to be symmetric
Internet of Things	✓	✓	Minimal (Kbps)	Low	Critical IoT requirements are frequently met via separate wireless networks rather than using the consumer's broadband connection
Streamed video (standard definition)	✗	✓	2 Mbps (SD) <sup>10</sup>	High	Some video has clear social value. Improving video compression continues to reduce bandwidth requirements
OS updates	✗	✓	Variable	Medium	Frequently happens slowly overnight. In many cases engineered to only use idle bandwidth
Content upload	✓	✗	n/a (upload key)	Medium	Regular upload of video to YouTube (for example) will require upstream bandwidth
Cloud storage	✗	✗	<2 Mbps <sup>11</sup>	Medium	Primarily private benefits
Streamed video (4K)	✗	✗	Up to 25 Mbps <sup>12</sup>	Very high	Incremental value of higher definition (requiring higher bandwidth) is likely minimal
Illegal Filesharing	✗	✗	2 Mbps <sup>13</sup>	High	Illegal filesharing needs little bandwidth but can be a major driver of traffic
Console game downloads	✗	✗	10s of Mbps	High	Largest files typically downloaded by households

<sup>6</sup> For a more detailed discussion of bandwidth requirements, see Communications Chambers (for BSG,) *Domestic demand for bandwidth - An approach to forecasting requirements for the period 2013-2023*, 5 November 2013

<sup>7</sup> See for instance NBN, *How much speed do you need*, 13 February 2015 which suggests 3

<sup>8</sup> Skype, *How much bandwidth does Skype need?* [accessed 1 September 2015]

<sup>9</sup> ComRes (for BSG), *Broadband Usage among Micro Businesses*, November 2014

<sup>10</sup> BBC, *Having trouble playing iPlayer programmes? Try an Internet Speed Checker* [accessed 1 September 2015]

<sup>11</sup> Drago et al, *Inside Dropbox: Understanding Personal Cloud Storage Services*, 14 November 2012. Similar speeds are noted by Gracia-Tinedo et al, *Actively Measuring Personal Cloud Storage*, July 2013

<sup>12</sup> NBN, *How much speed do you need*, 13 February 2015

<sup>13</sup> Assumed equivalent to real time delivery of SD video

10. The set of services that should be available to all by virtue of their role in assisting economic and societal participation and their ability to generate benefits for others include: email, web browsing/use and certain streamed video. Whilst rapid download of console games may require very high speeds, this would not in itself justify intervention to support, say, ultrafast broadband, since the benefits are fundamentally private. If the consumer in question was not willing to pay the full cost of high speed broadband for this purpose, why should taxpayers in general, or the customers of existing broadband subscribers in particular, subsidise him?
11. If we can partition services in this manner, it is then reasonable to ask whether those services that should form part of a USO are already accessible ubiquitously, or will be in the near future.

#### *Existing satellite provision*

12. High speed broadband is available to virtually every UK household today,<sup>14</sup> in the form of satellite broadband; although this fact is hard to reconcile with the DCMS' numbers, repeated in the CFI, that *"..up to 1 million UK premises will not be able to access speeds of 10Mbps or higher by the end of 2017"*.<sup>15</sup>
13. Satellite does have disadvantages relative to a fixed line connection, in that its cost is more sensitive to traffic volumes and it has higher latency than fixed technologies. However, the issue of traffic cost is less relevant if the focus is on the levels of usage that are sufficient for the vast majority of consumers.
14. An Ofcom study of usage amongst Kingston Communications' customers (June 2013) found a great variation in the levels of usage, such that the top 10% of users represented more than half of all usage.<sup>16</sup> While average usage was 25 GB/month, members of the top 10% consumed 127 GB each, of which 47 GB was video, and 24 GB was file sharing. We have a similar experience on our network.
15. Surprisingly neither Ofcom nor the DCMS appears to have given consideration to the traffic specification of the USO. If a satellite USO solution is required to offer unlimited traffic (including file sharing, 4K video etc.), then it would be very expensive. However, the traffic specification could be set at a level that was sufficient for the connectivity needs of the 90%, but which would require the heaviest users to cut back, or alternatively pay for their additional usage out of their own pocket. This latter approach seems more in keeping with the intent of a USO – its purpose is not to enable every household to torrent Game of Thrones episodes.
16. The picture below shows the pricing of Avonline's satellite service (15 Mbps downlink speed). Assuming an average monthly usage of 10 Gbps per month gives a

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<sup>14</sup> The footprint of broadband satellites serving the UK covers, to all intents and purposes, the entirety of its landmass. Further, Sky reports over 12m retail subscribers. The large majority of these will have a satellite dish attached to their home. Receiving communications via satellite is not a new phenomenon in the UK.

<sup>15</sup> A NEW BROADBAND UNIVERSAL SERVICE OBLIGATION CONSULTATION 23 March 2016

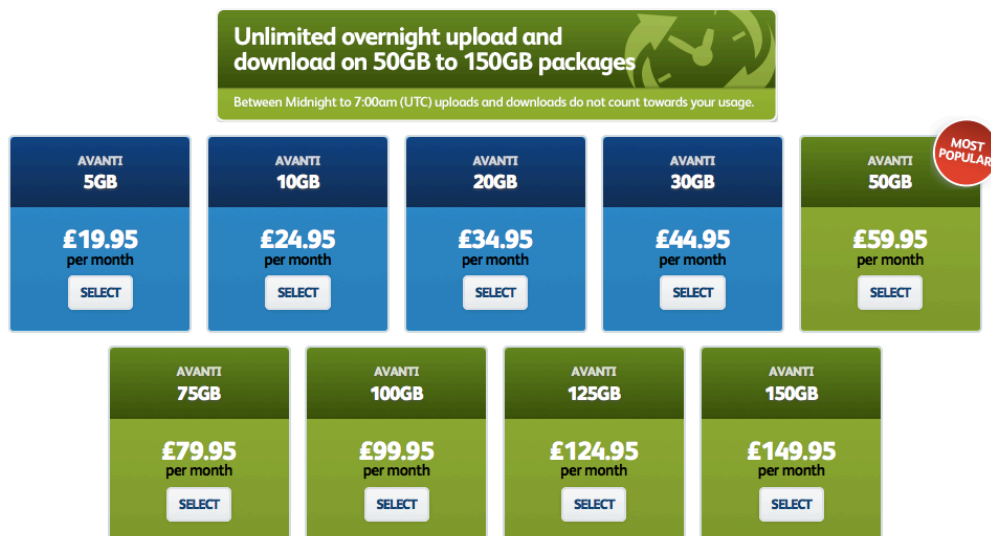
<sup>16</sup> Sandvine figures for European usage in 2014 show a similar ratio. Sandvine, [Global Internet Phenomena Report, 1H 2014](#), 14 May 2014

cost of £24.95 per month. Ofcom's 2015 Customer Experience Report shows the average price of residential broadband as £17.83 per month, or £35.60 per month when combined with the required fixed line. For comparison, Virgin Media does not require its customers to take a 'fixed line' and our charge is £24 per month for up to 50 Mbps.

Sample satellite broadband pricing 15 June 2016 – Avonline Broadband  
<http://avonlinebroadband.com/choose-your-package/choose-avanti-home/>

## 1 Monthly data package

This is the service and price that you'll use & pay for monthly.  
**FREE CONNECTION ON ALL OUR PACKAGES!**



17. Heavy users may decide that it is worth the extra traffic cost to be able to make heavy use of iPlayer, say, but that is a financial trade-off for them to make, with limited externalities to justify a policy intervention.
18. Moreover, satellite traffic costs will continue to fall, as technology improves. A current 2<sup>nd</sup> generation Ka band satellite has a typical capacity of 150-200 Gbps, compared to the 5 Gbps capacity of a Ku-band satellite of a decade ago.<sup>17</sup>
19. The UK has access to significant Ka capacity, primarily served by the following satellite families:
  - HYLAS 1 (Avanti) – c.350k user capacity (8 Ka uplink transponders).
  - HYLAS 2 (Avanti) –24 Ka uplink transponders
  - KA-SAT (Eutelsat) – c.1m user capacity, 90Gb/s throughput.
  - Astra 28.2 (SES Astra) – satellite family with 11 Ka transponders.
20. The current satellite capacity available for the UK will depend on: the download and upload speeds required, the size of the customer's dish and the bandwidth contention ratios that are deployed. As a rough approximation we understand that current capacity is in the 'low hundreds of thousands' of customers. Given, the build

<sup>17</sup> ThalesAlenia, *Contribution of satellite systems to 100% EU broadband coverage*, April 2013

out of competing infrastructures; the extension of the BDUK scheme and the likely take-up (see below), this may be sufficient in the medium to long-term.

21. Indeed government has evidence that satellite can effectively provide broadband services. BDUK commissioned seven Market Test Pilots to run from June 2014 till March 2016 to look at different ways to deliver superfast broadband in some of the UK's most sparsely populated rural areas. The seven Pilot projects included Avanti and Satellite Internet.
22. BDUK reports that:<sup>18</sup>
  - Non-fibre based technology suppliers can deliver reliable, superfast-capable broadband speeds and a quality of broadband service that satisfies the vast majority of customers;
  - All of the technologies being used, including satellite and fixed wireless, have demonstrated that they are capable of providing superfast speeds;
  - Initial feedback from customers revealed that most were positive about their new broadband service. The satisfaction rating was consistently high across fibre, fixed wireless and satellite technologies.
23. For some, the upfront cost of satellite equipment – in the range of £375 - might be more of a barrier than the monthly fee (if they are an average user).<sup>19</sup> However, this challenge is likely better met through a voucher scheme<sup>20</sup> similar to those for faster connections for businesses in urban areas, rather than a 'shotgun' USO upgrade. Addressing the affordability of an existing network is a very different policy challenge from funding the deployment of an entirely new network.
24. The higher latency of satellite may constrain certain applications. However, some of the affected applications (such as online gaming) may have limited externalities. Others, such as video calling, may be degraded rather than blocked. VPNs can be problematic on satellite links, though are relevant to only a small group of users.
25. Finally regarding satellite, we note that its near-universal availability creates a very different situation for broadband than applied to voice at the time of the creation of the voice USO in 1984. Then, for remote areas the only possible options were an exchange line from BT or nothing. There was no competing fixed or mobile voice, and satellite phones were not yet available. The USO therefore was critical to provide such areas with *any* connectivity. This contrasts sharply to the current broadband situation, where connectivity is not in question, only its technical parameters.

#### Wireless

26. Another option that will be available for many households with poor fixed broadband is wireless. Mobile data coverage is already increasing rapidly in the UK. The block of 800 MHz spectrum sold to O2 in 2013 included an indoor coverage obligation that 98% of the population should be able to receive 2 Mbps by end 2017

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<sup>18</sup> DCMS:Emerging Findings from the BDUK Market Test Pilots February 2016 (see Executive Summary)

<sup>19</sup> Avonline Broadband, [Choose Avanti Home](#) (accessed 4 September). Includes installation

<sup>20</sup> See <http://avonlinebroadband.com/broadband-vouchers/>



(and 95% within each of Scotland, Wales and Northern Ireland). While other operators do not carry this obligation, they intend to match these coverage levels.<sup>21</sup> In practice, since the various operators' indoor coverage areas will not exactly overlap, this means aggregate coverage will be greater than 98%. Although the tests are carried out in urban areas, Ofcom reports that the average upload speed on 4G is 13.6 Mbps with a 93.8 percentage chance of a speed in excess of 2 Mbps.<sup>22</sup>

27. Outdoor coverage will be even higher – walls attenuate mobile signals, reducing the scope of indoor coverage. However, for those wishing to use mobile broadband in areas with borderline indoor coverage it is possible to install an outdoor aerial to receive a stronger signal. In combination this means many households with poor fixed broadband today may be able to access mobile broadband of at least 2 Mbps (and potentially more). As with satellite equipment, it might be that targeted subsidies for such aerials was a far more efficient intervention than widespread investment in the fixed network.

### Summary

28. Virgin Media believes that the case for a broadband USO has been assumed, but not adequately made. There is no question that poor broadband causes frustration, primarily to those in rural areas. However, there are many areas where there is a rural/urban divide on frustration. Those in urban areas deal with worse traffic, higher crime and higher property costs. Those in the countryside have longer ambulance response times, fewer available services and poorer public transport. At the moment, the balance of these frustrations seems to be to the benefit of rural dwellers. For each of the last 15 years there has been a substantial net migration of population out of urban areas into rural ones.<sup>23</sup>
29. The objective of a USO policy should not be to remove a 'frustration divide'. Rather, it should be to ensure that the set of services that are necessary to ensure digital inclusion are at least *available* to all. As the discussion of applications above demonstrates, this involves having access to a relatively narrow set of applications, and applications that generally are less technically demanding. Indeed, the existing capability and coverage of satellite broadband can deliver all of the services required to meet the needs of a properly specified USO.

### Call for Inputs

30. As is evident from the above, we are not persuaded that the case has been made for a revision to the USO. However, we recognise that this is a general 'call for inputs' and we respond to the rest of the consultation *assuming* that this case can be made. To put into context much of what follows, we summarise below our view of the characteristics of a revised USO:
  - a. USO should be specified such that it does not apply to geographic areas that will be supplied 'by the market';

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<sup>21</sup> Ofcom, *Infrastructure Report 2014*, 8 December 2014

<sup>22</sup> Ofcom Mobile Broadband Performance report April 2015.

<sup>23</sup> DEFRA, *Statistical Digest of Rural England*, June 2015

- b. 10 Mbps download speed is adequate to supply the services required to ensure economic and social participation in society - this is unlikely to change in the foreseeable future and so future-proofing is not an important consideration;
- c. There is a high bar on changing BT's status as the self-funded universal service provider. Specially, the provision of 10 Mbps to areas that will not be supplied by the market using, for example, BT's Long-Reach VDSL technology is unlikely to constitute an unfair burden and BT should remain the sole Universal Service Provider (USP) outside of Hull;
- d. That said, BT's obligation should not be open-ended:
  - i. The USO should not apply to areas that will be subject to competitive supply;
  - ii. BT should have the option of only upgrading or installing a cabinet when there is evidence of demand for higher speeds. For example, evidence could be in the form of paid deposits from a percentage of premises within the reach of a specific cabinet. Of course, BT could decide to waive this requirement;
  - iii. Analogous to the current USO, there should be a maximum cost per premises to supply those that are off-network or where additional construction work is anyway required;
  - iv. Where there is insufficient demand (per cabinet) or the cost of serving an individual premise is greater than the maximum amount, these premises can be served by an extension to the BDUK scheme with the upfront cost of the satellite dish funded by a voucher scheme. Government can, of course, make this means tested;
  - v. BT should have an incentive to seek further technological improvements to upgrade to higher speeds; this is one additional reason for not regulating the wholesale price of VULA.

31. We expand upon these points in the remainder of our response.

#### Specification and scope of the USO

32. We outline below the technical characteristics of a USO based on the requirements of those services needed to participate in society and which, typically, generate some externalities. It is clear that 10 Mbps is more than adequate for the USO and that the need for future proofing has been considerably exaggerated.

#### *Minimum technical performance*

33. Internet applications are of course diverse. They include those with enormous social and economic benefits – e-government, e-health, communications tools and so on. They also include those with primarily private benefits – online gaming, for example. And there are also applications that are value destructive, such as illegal downloading of material protected by copyright.

34. By extension, different applications have different relevance to a USO. By considering the technical requirements of those applications with greatest relevance to the USO rationales, we can begin to make judgments regarding the appropriate

technical specification of the USO itself.

35. Some of the most important applications have relatively low requirements both in terms of data volume and bandwidth (speed). Email is by some margin the most widely used form of online communication, and clearly has both network effects and prevents social isolation for the user – it has a strong fit with the rationale for USO. However it requires minimal bandwidth and consumes small amounts of data (barring large attachments) and has been a staple of the internet since the days of dial-up.<sup>24</sup>
36. Web-use brings fewer network effects - one consumer's web use brings little benefit to another consumer. That said, there are network effects between consumers with web-access and content and service providers – every extra consumer online is one additional potential customer for Amazon or user for Facebook. More importantly, web use enables a host of services with clear social or economic externalities. Consumers can access medical advice, file their taxes online, compare prices, work from home and so on. (We note that home working is far more common in rural hamlets and dispersed areas than in urban areas – 33% vs 12% of those employed – suggesting that bandwidth has not been a material barrier for many of those in remote areas).<sup>25</sup>
37. Bandwidth requirements for web surfing are imprecise. Again, it is an application that has existed since the days of dial-up, though sites have been getting 'heavier', requiring greater bandwidth. NBN co (the Australian government-owned broadband network) says that a "'click-bang' web viewing experience requires download speed of at least 3 Mbps."<sup>26</sup> While surfing at a slower speed may be less satisfying, that does not mean that value creating services become unviable. In other words, the marginal social benefit of speed is already diminishing at a speed of 3 Mbps.<sup>27</sup>
38. Both IoT and streamed video (in SD) can bring externalities, but neither requires great bandwidth. Streamed video also has partial substitutes that require no bandwidth at all. For instance, while iPlayer enables time-shifting of viewing, so does a PVR. This somewhat reduces the incremental value of streamed video.
39. Beyond this, we move to a range of applications which may have private benefits, but which have a limited connection to the rationale for the USO. For example, cloud storage is valuable, but it does not prevent social or economic isolation, or enable participation in e-government or e-health.
40. For video streaming we draw a distinction between standard resolution and high-definition (and 4K). The ability to view video can bring externalities – viewing educational material on YouTube, or readier access to PSB material via iPlayer. Such viewing requires only moderate bandwidth in standard definition, generally less than 2 Mbps. Higher speeds are required for higher resolution. 4K TV can require

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<sup>24</sup> Given that dial-up enables email, it is arguable that email is irrelevant to the broadband USO, since the *voice* USO is sufficient to enable universal access

<sup>25</sup> DEFRA, *Statistical Digest of Rural England*, June 2015

<sup>26</sup> See for instance NBN, *How much speed do you need*, 13 February 2015 which suggests 3 Mbps

<sup>27</sup> Telstra reports that the 'future of medical diagnosis' requires 5 Mbps

[http://www.theregister.co.uk/2016/06/19/telstras\\_future\\_of\\_medical\\_diagnosis\\_needs\\_just\\_5mbps](http://www.theregister.co.uk/2016/06/19/telstras_future_of_medical_diagnosis_needs_just_5mbps)

up to 25 Mbps for example. However, the incremental social or economic benefit of higher resolution is minimal. An individual is not a better-informed citizen for having watched the news on iPlayer in 4K rather than SD.

41. Thus the applications most relevant to the purposes of a USO are workable well within a 5 Mbps envelope, or indeed lower.<sup>28</sup> There is certainly no justification to go beyond 10 Mbps. Moreover, they generally have relatively low data consumption requirements and are not sensitive to stringent latency requirements. By extension, this includes satellite and wireless within the list of technologies that can be used to supply the types of applications relevant to the USO.

#### *Ofcom's 10 Mbps*

42. Ofcom concludes (in its Connected Nations Report 2015 and prior analysis) that at speeds below 10 Mbps, household usage is constrained. This is based on an analysis of how traffic varies with line speeds. This appears to be important to its support for a USO of at least 10 Mbps. In addition, Ofcom has said that the USO speed requirement would need to be reviewed in the future
43. However, deriving a USO from an analysis of overall usage rather than specific activities effectively ensures that activities of little social value are facilitated, including ones that Government considers to be socially or economically deleterious. Video is the biggest driver of household traffic growth and within it, YouTube, Netflix, illicit peer-to-peer file sharing and pornography the largest components.
44. Moreover Ofcom's theory depends on an interpretation that there is a causal link between low speed and low usage. However, Ofcom itself acknowledges that high demand users are likely to opt for faster broadband packages – that is, usage drives choice of speed, rather than the other way around. On its website, Ofcom states that *"consumers who opt for higher speed services (>40 Mbps) on average consume more data"*. This is demonstrated in its analysis, which shows a dramatic leap in usage between customers taking 39 Mbps speeds and those taking 41 Mbps (42%). The explanation is that high demand users have opted for BT's Infinity 2 product. In addition, Ofcom's conclusion that usage is constrained at lower speeds ignores the fact that data consumption is growing rapidly on those lines. Usage on 1 Mbps lines roughly doubled between 2014 and 2015 – a faster rate of growth than on any other line speed. It also ignores demographic constraints on usage at the slower end of the broadband market. The most remote households in the UK have significantly higher proportions of over 65s and of homes with "no usual resident". Thus the lower usage of some low speed households may be because of the location of such lines, not a constraint of speed.
45. In addition to its analysis of traffic and line speeds, Ofcom offers the following hypothetical example:<sup>29</sup>

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<sup>28</sup> Given this, the specification of the USO could include a reasonable degree of latitude about the average speed actually achieved, or amount of degradation allowed during the busiest time of the day.

<sup>29</sup> G.Fast – it's [sic] role in meeting mass market broadband needs and the consequent regulatory issues. Huw Saunders, Director, Network Infrastructure 21st April, 2015

Hypothetical example: Simultaneous use in a four person household			
User 1	User 2	User 3	User 4
Youview + web browsing = 3.5Mbit/s	Video call = 1Mbit/s	Iplayer = 2Mbit/s	Netflix in HD + video call = 6Mbit/s
Total speed requirement for household = 12.5Mbit/s			

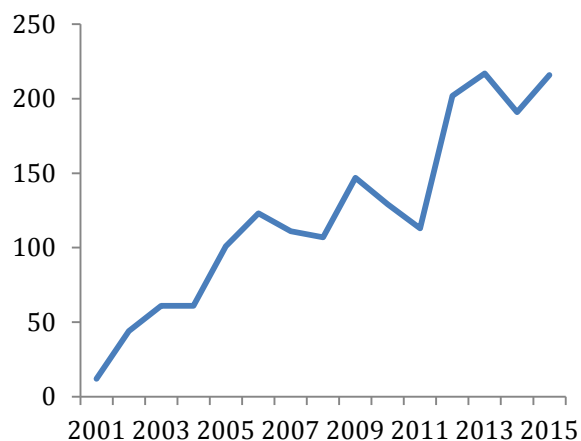
46. This hypothetical example is a household with four simultaneous users, where 6 Mbps are being used for “Film streaming in HD (with a further 2 Mbps for catch up TV)”. Using that as the basis to determine a required level of service for all USO households will lead to significant over-provision, not least because only 20% of UK households have four residents or more. Further, the incremental value of enabling an entire household to undertake even socially valuable online activities *simultaneously* is minimal

#### Future Proofing

47. Another justification given is that a 10 Mbps threshold would future-proof a USO against increased connectivity requirements. If the purpose of a USO is to underpin access to the basic services that allow for participation in society, it is hard to envisage that those activities would require increasingly levels of speed. To the contrary, technical improvements are allowing even demanding applications to function better at lower speeds.
48. Streaming video is a case in point. It now represents approximately 45% of European fixed traffic in peak periods.<sup>30</sup> However, precisely because of this, there has been enormous attention to developing techniques for efficiently compressing video. The diagram below shows the rapid growth in patent filings in this area.

<sup>30</sup> Sandvine, *Global Internet Phenomena, Asia Pacific and Europe*, September 2015. ‘Real Time Entertainment’ is 45.57%. The vast majority of this will be video, though the category includes streaming audio

US video compression patents<sup>31</sup>



49. This has resulted in substantial and ongoing improvements. The bandwidth required to deliver a given video quality has halved every seven years.<sup>32</sup> The successor to the currently widely utilised H.264 compression standard – H.265 – roughly halves the required bit rate. Adoption of H.265 is steadily increasing.<sup>33</sup>
50. Codec developers are now demonstrating systems carrying 4K in 7-8 Mbps,<sup>34</sup> or even as low as 2 Mbps<sup>35</sup> (though it will take time for compatible systems to be widely deployed in the field). Clearly this represents substantial downward pressure on domestic bandwidth requirements.
51. Similar compression techniques are also being used for virtual reality. NextVR reports delivering real-time VR in 4-6 Mbps, for example.<sup>36</sup> Speeds as low as 2 Mbps (for 4K VR) are being demonstrated in the lab.<sup>37</sup>
52. These developments are part of a wider trend of application providers reducing the network requirements of their services, driven in particular by the need to make them viable over mobile networks, including those without widespread 4G. Facebook, for instance, is investing considerable effort in making its service viable on 2G connections.<sup>38</sup> In many cases the innovations that support delivery on mobile networks also translate into lower loading on fixed networks.
53. At a recent presentation to the Broadband Stakeholders' Group by Simon Mason of Arquiva showed the graph below. If required bit rates decline by 50% every 7/10 years, this suggests that any revised USO is unlikely to need a review for many years to come.

<sup>31</sup> US Patent & Trademark Office, [Patent Application Full Text and Image Database](#) [accessed 19 March 2015]. Search for abstracts containing "Video coding" or "Video compression"

<sup>32</sup> ZetaCast, [Technical Evolution of the DTT Platform](#), 2012

<sup>33</sup> See for example "[HEVC goes beyond HD](#)", TVBEurope, 4 June 2013. A wider range of sources are available in Communications Chambers, [Domestic demand for bandwidth -An approach to forecasting requirements for the period 2013-2023](#), 5 November 2013

<sup>34</sup> BBC, [V-Nova streaming tech produces 4K compression 'worth watching'](#), 1 April 2015

<sup>35</sup> The Online Reporter, [Tveon Claims 4K Streams at under 2 Mbps](#), 19 October 2015

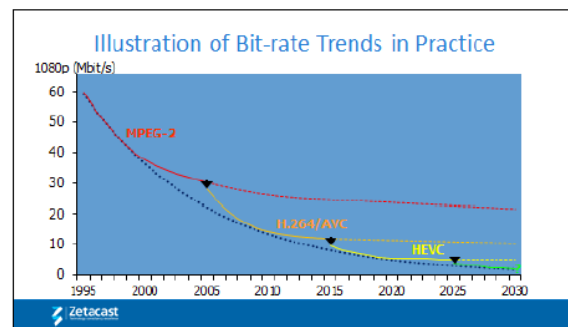
<sup>36</sup> [a] list, [NextVR Lands \\$30.5M in Funding, Looks to Pioneer the Promise of VR](#), 16 November 2015

<sup>37</sup> Conduit, [Efficient Video Compression for Live VR Streaming](#) [accessed 21 March 2016]

<sup>38</sup> See for example: Facebook, [The technology behind preview photos](#), 6 August 2015

► **Developments in Compression**

- Over the past 20 years codecs have followed a certain trend in efficiency.
- It's possible to extrapolate that every 7/10 years, for a given subjective quality, the required bit rate is reduced by 50%.



*Legal Constraints*

54. The Universal Service Directive (USD) places limits on what speed a USO can be set at and how it can be funded. The Directive requires that a USO can enable “*data rates that are sufficient to permit functional Internet access, as defined by the Member States, taking due account of... the prevailing bandwidth used by the majority of subscribers*”. If Member States wish to make additional provision beyond that level, the Directive<sup>39</sup> prohibits the establishment of an industry levy as the funding mechanism in recognition that the justification for cross-subsiding broadband access diminishes above a basic level of service.
55. Some form of limit is recognised by the DCMS in its recent consultation where it notes the non-binding guidance of the Commission: “*The European Commission subsequently issued guidance which sets out that Member States could be asked to consider including broadband connections in the USO where the data rate in question is used at national level (i) by at least half of all households and (ii) by at least 80 per cent of all households with a broadband connection.*”
56. In setting these constraints, the Directive acknowledges that a USO carries an inherent risk of distorting competition. The Directive explicitly states that a USO must “*seek to minimise market distortion*”. Creating an industry levy as the funding mechanism amplifies that risk. Any allocation of funds needs to be based on objective and non-discriminatory criteria. For example, if applied only to fixed broadband providers, the material cost and pass-through to customers would give mobile broadband or wireless providers unfair pricing advantage. OTT video services would be the primary beneficiary of a USO set at 10 Mbps as opposed to 2 or 3 Mbps, yet the likes of Netflix appear unlikely to be included in any levy. This would put it at a significant advantage versus telecommunications companies owning infrastructure and offering their own OTT propositions – such as Sky or Virgin Media.

*Summary*

57. Given the purpose of the USO, we no evidence that its technical specification should require download speeds of more than 10 Mbps or that this level will require reconsidering within the foreseeable future.

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<sup>39</sup> See Article 32

### Geographic Scope of a USO

58. We hope that the DCMS and Ofcom can learn some important lessons from the experience of state funding of superfast broadband. Specially, failings in the design of the scheme have led to the subsidised funding of superfast broadband in postcodes that, in its absence, would have been covered by BT or others. Ill-judged interventions can clearly distort the workings of the market.
59. In its results for the first quarter ending 30 June 2015 BT announced that “[g]iven the strong market-wide demand for fibre, we have increased our base case assumption to 28% penetration with 30% in Broadband Delivery UK (BDUK) areas, although it will still be many years before we recover our investment.”<sup>40</sup> At its full year results on 5 May 2016, BT revised this assumption upwards again to 33%.
60. The existing contractual arrangements between BT and local authorities anticipate that, if BT exceeds the take up assumptions upon which the public subsidies are made, some proportion of any ‘excess returns’ will be clawed back by the public authorities during the first seven years of the project (according to BT’s 2015/6 results claw back now totals £258m). This will have the effect of reducing the overall amount of public subsidy required to meet existing targets and/or will allow public authorities to subsidise additional network deployment. However, the existing provisions only claw back a proportion of the excess returns earned by BT, and then only in the first seven years of the project. To the extent that BT can expect to earn profits from superfast customers well beyond year seven (either because they remain superfast customers of BT beyond that point or because additional customers take up the superfast service after that point), then these returns will fall outside the claw back provisions and will be retained by BT alone. These are the profits earned from the superfast customer base which public subsidy has allowed BT to acquire.
61. If this types of scheme persists, and take up of superfast broadband exceeds 33%, BT will receive too high a subsidy in some areas or it will **receive a subsidy to build superfast broadband in areas that it or others would have otherwise covered on a commercial basis**. Taking a 20-year view of the project, we estimate that BT could fund the project without any public subsidy provided it could be confident of obtaining 45% take up by year seven (i.e. 36% higher than BT now thinks it can achieve). This looks highly likely; as Enders notes “[w]e see high speed penetration as continuing to slowly but inexorably rise towards a saturation level well above 50%”.<sup>41</sup>
62. This is more than a theoretical gripe. Virgin Media has experiences of local authorities that are intending to use public money to subsidise broadband in postcodes that we plan to cover in Project Lightning<sup>42</sup>. [Confidential].
63. [Confidential]

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<sup>40</sup> <http://www.btplc.com/Sharesandperformance/Quarterlyresults/2015-2016/Q1/Downloads/Newsrelease/q115-release.pdf>

<sup>41</sup> Enders Analysis UK broadband, telephony and pay TV trends Q2 2015 20 August 2015

<sup>42</sup> Project Lightning is Virgin Media’s network expansion programme to pass and additional by four million premises over the next five years at a cost of £3bn.



[Confidential]  
[Confidential]

64. A way of avoiding this predicament is to specify that any USO should be specified 'out to in'. The demand for higher speeds in the remotest of areas should be met first. Virgin Media has a thorough understanding of the economics of cable rollout. [Confidential]. We suspect other builders of infrastructure can carry out a similar analysis.<sup>43</sup> The product of this work can be used to define the postcodes to be subject to an initial phased of the USO. This ranking would apply irrespective of which entity (or entities) is charged with meeting the USO. We see no case for any USO obligation to apply in urban areas.
65. At the very least, USO designated areas should be rapidly 'de-scoped' when others announce an intention to build.

How should we ensure the USO is affordable?

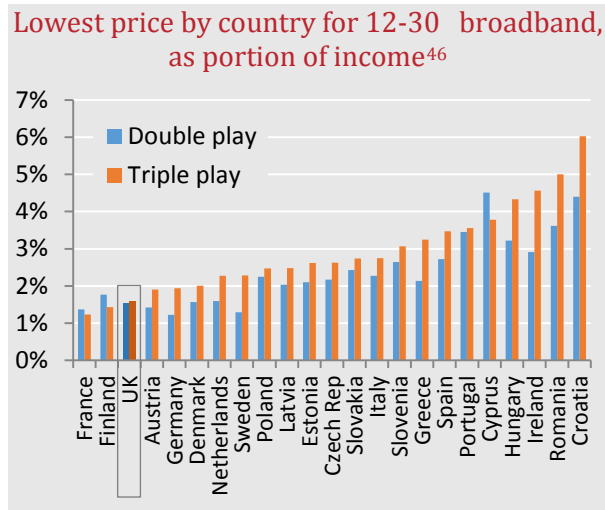
66. We are not aware of any analysis that suggests that broadband is currently unaffordable. In the 2015 Consumer Experience Report Ofcom finds that *"on the whole, we found that the UK telecoms market continues to deliver choice and value for consumers, with most people finding services to be affordable. The average household spend on communications services has fallen in real terms (i.e. adjusted for inflation)."* (page 6). Looking at the data behind this statement Kantar Media finds:
- 89% of UK adults with some responsibility for deciding the household's communications services had experienced no difficulties in paying for the services in the last year.
  - 2% of UK adults have experienced 'affordability issues' – defined as those who have been behind on their payment for any communications services by one month or more in the last year.
67. This suggests that affordability of broadband should not be a significant concern. In line with other markets, UK ISPs are delivering ever-greater bandwidth and traffic volumes for roughly flat revenue per customer.<sup>44</sup> Unit cost has fallen steadily over time. Moreover, the affordability of UK broadband compares well with other countries. Expressed as percentage of income, UK prices are amongst the lowest in Europe (see the chart below).<sup>45</sup> Across the EU28, only four countries are more affordable for double-play products, and only two for triple-plays (12-30 Mbps).

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<sup>43</sup> For example, on its website Gigaclear says: "At the end of April 2016 we have over 20,000 properties passed as of today and expect to have over 50,000 by the end of the year across 15 counties, with substantially more in 2017."

<sup>44</sup> See p314 of Ofcom, [Communications Market Report](#), 6 August 2015

<sup>45</sup> See also Ofcom's analysis of broadband basket pricing for a narrower set of countries. Ofcom, [International Communications Market Report](#), 11 December 2014 (p95)



68. Perhaps for this reason, UK consumers are less likely consider price as a main factor when choosing an ISP – only 62% do so compared to an EU28 average of 69%.<sup>47</sup>
69. Affordable tariffs in the UK have contributed to the UK having one of the highest household penetrations of broadband in Europe. Clearly it is a very positive indicator of the performance of the UK broadband market that more consumers are choosing to buy its products than in virtually any other country.
70. Under the arrangements for the USO that we envisage, subject to safeguards, BT will remain as the sole universal service provider, and it will fulfill the USO within defined areas or postcodes. In doing so BT would have an incentive to price the ‘USO service’ to tempt households to upgrade their existing (slow) broadband service and then, in time, to buy superfast broadband when the capability exists. Given that there is currently no affordability problem, it seems unlikely that there will be one in the future. At least, Ofcom should wait for evidence that BT’s pricing is ‘unaffordable’ before designing an intervention.

*Should there be a social tariff for broadband services?*

71. BT already offers Basic plus Broadband. Under our proposal this tariff option would also be available to those that qualify for services supplied under the USO.

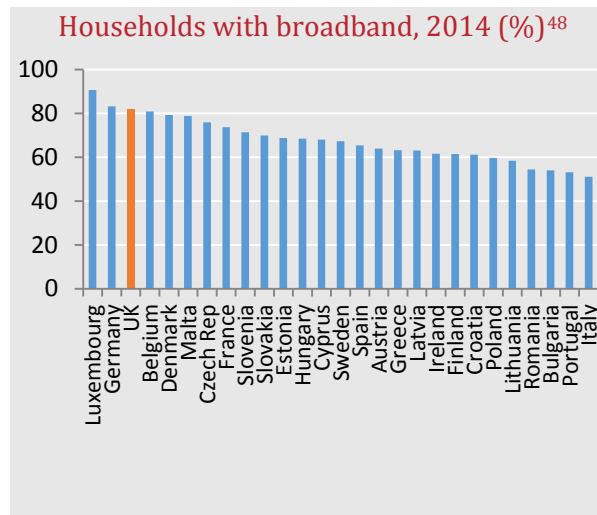
**Demand for the USO**

*What might the potential demand for the USO be?*

72. The UK’s relatively high broadband penetration (see the diagram below) and the revisions to BT’s take-up assumptions under the BDUK scheme could indicate some suppressed demand in areas with low broadband speeds.

<sup>46</sup> Van Dijk (for EC), *Broadband Internet Access Cost (BIAC) 2014*, 22 October 2015 (p34)

<sup>47</sup> EC, *Special Eurobarometer 414-438: E-Communications and Digital Single Market*, May 2016



73. That said; the survey results from Government's Market Test Pilot areas do cast some doubt on consumers' enthusiasm for high-speed connectivity in currently unserved areas. More than two thirds (68%) of respondents did not know what their internet speed was, and over a third (36%) were not sure of their data usage. Additionally, Government notes that the "primary reason for not participating in the scheme (among those who were aware of the MTP offer) was customer satisfaction with a current provider's service. 39% of those surveyed, when asked why they were not or would not be interested in the scheme, said it was because they were happy with the service that they already received. This suggests a lack of incentive among potential consumers, even though they are in an area without high speed broadband."<sup>49</sup> A further 17% of respondents stated that they do not use the internet often or regard it as a hobby – these casual users (and those currently content with their speeds) would be significantly over-provisioned by a 10 Mbps USO.
74. We also know that those in the remote areas of the UK skew older in their population, with 21% aged 65 and older, compared to 16% for the rest of England & Wales. Older individuals are less likely to use the internet, and make less intense use of it when they are online.
75. This suggests that demand is hard to predict. Our proposal is that BT remains the sole universal service provider outside of Hull, for all but the hardest to reach areas, to supply a 10 Mbps broadband connection. We discuss below why this would not be an unfair burden for BT. However, this obligation should not apply irrespective of demand or the cost of supply, and should be confined to those areas where others will not provide such a service.

#### *BT as the Universal Service Provider*

76. The choice of technology to meet the USO is obviously a decision for BT, but it believes that the most cost effective solution would be for BT to use Long-Reach VDSL or wireless to the cabinet<sup>50</sup>. The new CEO of Openreach, Clive Selley, has said:

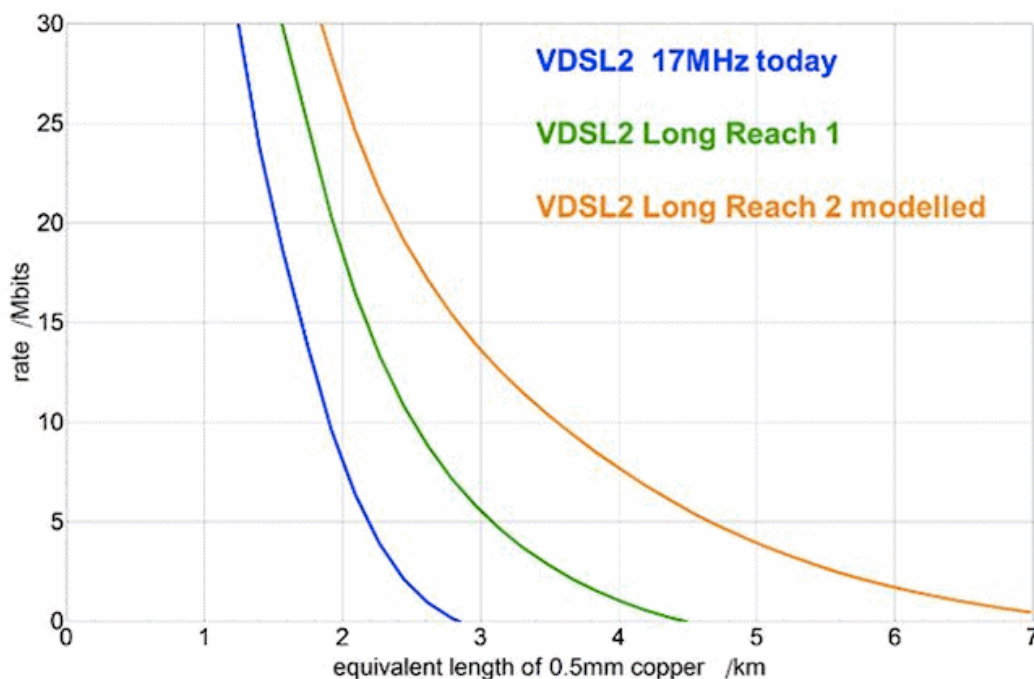
<sup>48</sup> EC, [Digital Agenda Scoreboard](#) [accessed 16 November 2015]

<sup>49</sup> p.43

<sup>50</sup> See BT's Delivering Britain's Digital Future presentation 22 September 2015

...at our labs up at Martlesham, Joe Garner and I recently reviewed a new technology that we are calling 'Long-reach VDSL'. This demonstrated how we could take a 2km long copper line currently achieving 9Mb/s on standard VDSL, and increase this to 24Mb/s, and longer term, through standards changes, we could achieve even higher speeds.<sup>51</sup>

77. The diagram below represents how BT could use this technology to achieve speeds of 10 Mbps for premises over 2.5-3.5km from the cabinet. Importantly, Long-Reach VDSL can also be used to deliver near superfast speeds to those who currently get 10 Mbps.



Model showing performance of LR VDSL2

Source: <http://www.thinkbroadband.com/news/7176-long-reach-vdsl2-what-effect-would-it-have.html>

78. However, a fixed solution will, de-facto, require spend to upgrade all households in a USO area. There is no way to bring FTTC to specific households - all those connected to a certain cabinet receive the upgrade whether they need it or not. Conversely satellite and fixed wireless solutions can be configured to take account of the fact that demand for the USO service may build over time, and may only come from a subset of premises.
79. For this reason, we suggest that BT should only be *required* to upgrade a cabinet when there is a demonstrable minimum level of demand. For Virgin Media's Project Lightning, we allow customers to express their desire for our service using [www.cablemystreet.com](http://www.cablemystreet.com). Recently, we launched a **Supercharging Local Communities** campaign. Virgin Media has challenged itself to bring its network to 40 local communities over the next two years. Where and when we build will be

<sup>51</sup> Quoted on <http://www.ispreview.co.uk/index.php/2015/09/can-bts-long-reach-vdsl-fttc-fibre-broadband-help-rural-homes.html>

determined by the interest we see from [Cable My Street](#). We have announced the first 10 communities with the most registrations and we have committed to connecting these communities as soon as we can:

1. Kirknewton (West Lothian)
2. Houston (Renfrewshire)
3. Ratby (Leicestershire)
4. Bridge of Weir (Renfrewshire)
5. Wilsden (Bradford)
6. Kilmalcolm (Inverclyde)
7. Stoke Poges (Bucks)
8. Lightwater (Surrey)
9. Oakley (Poole)
10. Hartney Whitney (Hampshire)

80. A similar way of assessing demand could be used by BT: those premises stymied by lack of demand from their neighbours can always opt for a satellite service (the State may wish to make a contribution to the cost of the dish through an extension of the voucher scheme). The same could apply to premises that are currently off-net or are located too far from the cabinet for which the cost of supplying service at 10 Mbps is greater than (say) £3,400.

81. Virgin Media's experience in Lambourn (Berkshire) is instructive. [Confidential]

[Confidential]

[Confidential]

82. [Confidential].<sup>52</sup>

83. Put simply, a request for service would be reasonable when there is a minimum level of demand by cabinet, but disproportionate for an *individual* premise when the cost to supply service is greater than a predefined amount. The latter would only count toward the minimum level of demand if the net cost of serving the premise is less than the maximum amount.

#### **Cost, efficiency, and the provider of the USO**

84. There is a high bar on changing the identity of the current universal service provider. The 'default' position is that there is no industry funding mechanism unless Ofcom considers that the provision of universal services may represent an 'unfair burden' on BT (or KCOM).

85. The concept of 'unfair burden' has been judicially considered in the Base case<sup>53</sup>. In that case, the court determined that:

- 'it is only on the basis of the calculation of the net costs of the provision of universal service, as referred to in Article 12, that national regulatory

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<sup>52</sup> [Confidential]

<sup>53</sup> *Base NV and Others v Ministerraad*, Judgment of the Court (Fourth Chamber), 6 October 2010.

authorities may find that an undertaking designated to provide universal service is in fact subject to an unfair burden' (paragraph 37);

- an 'unfair burden' is a burden that '*is excessive in view of the undertaking's ability to bear it, account being taken of all the undertaking's own characteristics, in particular the quality of its equipment, its economic and financial situation and its market share*' (paragraph 42); and
- it is not sufficient to conclude that there is a '*loss-making situation*' from the provision of universal services (paragraph 46). There must be an individual assessment of the impact of bearing that cost on the relevant operator (Para 51).

86. The European Commission noted that:<sup>54</sup>

*The Court of Justice has identified specific elements that should be taken into account when evaluating the intangible benefits arising from USO. They should be established in line with calculations used for business valuations, and include e.g.: ubiquity, life cycle effect, marketing/sales/advertising benefits, brand image, loyalty and recognition/corporate reputation, benefits from provision of other services on a commercial basis, access to subscriber data, and information and technical and commercial benefits arising from the increased extent of the network.*

87. Ofcom has reviewed whether the provision of universal services comprises an 'unfair burden' a number of times, each time determining that BT was not subject to an unfair burden:

- In 1997, Oftel found there was a "*significant net benefit*" to being a USO provider;<sup>55</sup>
- In 2001, Oftel reiterated this determination, in the context of BT exhibiting profitability that "*exceeded what BT needed to cover its full costs and make a reasonable return*"<sup>56</sup>;
- In 2003, Oftel confirmed this view in relation to BT and KCOM. Oftel stated that it considered the benefits of being USPs to be "*considerable*"<sup>57</sup>;
- In its 2005–06 review, Ofcom updated its assessment, determining that "*since 2001 the costs of serving uneconomic customers have fallen significantly while the costs of providing uneconomic payphones has risen sharply by a similar amount*", and that brand image and advertising remained major benefits to USPs. It concluded that: "*We estimated the*

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<sup>54</sup> COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Universal service in e-communications: report on the outcome of the public consultation and the third periodic review of the scope in accordance with Article 15 of Directive 2002/22/EC

<sup>55</sup> Oftel, Review of Universal Telecommunications Services, September 2000.

<sup>56</sup> Oftel, Universal Service Obligation – A statement issued by the Director-General of Telecommunications, 30 August 2001, and Review 2006, paras 7.17-18.

<sup>57</sup> Designation paragraph 2.8.

current costs of USO for BT are around £57-74m and the benefits are around £59-64m. Ofcom has concluded that these estimates are reasonable and believes that there is unlikely to be an undue financial burden currently on BT as a result of USO<sup>58</sup>.

88. We suspect that the costs of the USO are known only to BT. The most comprehensive, publically available, analysis to date<sup>59</sup> (shown below) put the total cost of delivering FTTC to the final 3%<sup>60</sup> of households at roughly £800m. If we (picking very rough numbers) assume that there are 150k premises that BT would not be required to serve for reasons of cost, this number could reduce to £400m. If, using BDUK estimates, the ‘aid intensity’ required by BT is at 75% (i.e. slightly higher than that required under the BDUK scheme) and the assessed benefits of being the USP are at a similar level to the previous assessment, the net cost of the obligation to BT is £240m.

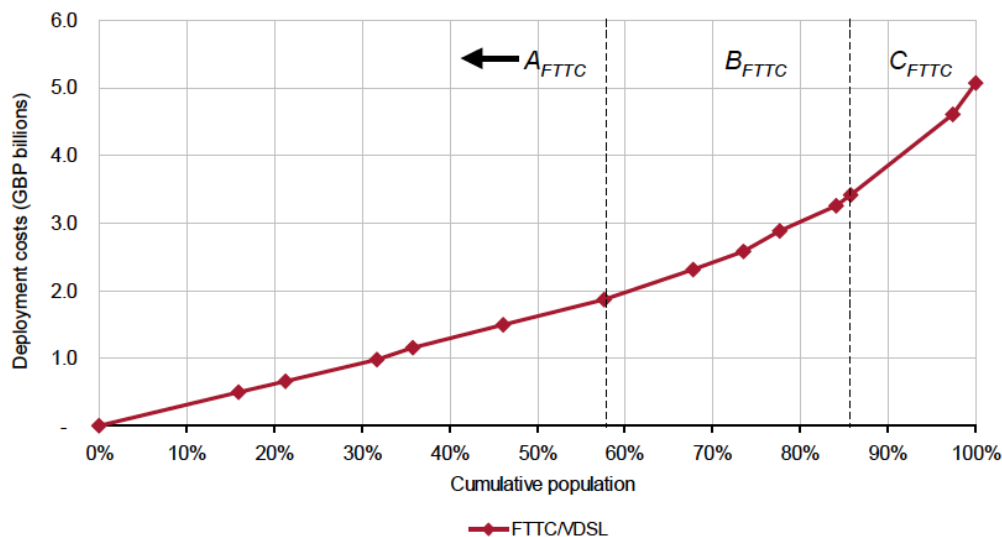


Figure 1.5: Total cost vs. percentage population for FTTC/DSL [Source: Analysys Mason for BSG]

89. As we note above, the Consumer Rights Directive (i.e. the amending Directive to the Universal Service Directive) states that alternative funding can only be deployed where “such measures result in an unfair burden on a designated undertaking, taking due account of the costs and revenues as well as the intangible benefits”. If the capital cost to BT of a revised USO are spread over four years, the cost to BT of

<sup>58</sup> Ofcom, Review of the Universal Service Obligation – Statement, 14 March 2006, para 1.17, [http://stakeholders.ofcom.org.uk/consultations/uso/uso\\_statement/](http://stakeholders.ofcom.org.uk/consultations/uso/uso_statement/).

<sup>59</sup> [http://www.analysismason.com/PageFiles/5766/Analysys-Mason-final-report-for-BSG-\(Sept2008\).pdf](http://www.analysismason.com/PageFiles/5766/Analysys-Mason-final-report-for-BSG-(Sept2008).pdf) Figure 1.5

<sup>60</sup> We assume the final 3% because in front of the DCMS Select Committee on 13 April 2016 Minister Ed Vaizey said: *BDUK is there as the central authority to ensure that we contract with Openreach at a fair price. The proof is in the pudding, in the sense that we have already clawed back £130 million and we are on course to claw back £250 million, maybe more. It has been a very cost-effective programme when you consider the headline figure of, roughly speaking, when you include clawback, £1.5 billion. It has every chance of reaching 97% of the country. I think that is a phenomenal achievement and I am sure you would agree.* [Our emphasis].

£60m would represent less than 1% of BT's 2015/6 EBITDA and less than 2% of that year's free cash flow. We suggest that this level of expenditure does not constitute an 'unfair burden'.

90. BT, of course, has an incentive to reduce this cost and to persuade as many as possible to upgrade or sign up to its service. We also believe that BT should be encouraged to upgrade its technology, and upsell its customers, to superfast broadband. This can be greatly assisted by retaining pricing freedom for wholesale access to this service.
91. We note that our analysis is consistent with comments made by BT's CEO the DCMS Select Committee on 'establishing world class connectivity throughout the UK' on 16 March: (our emphasis).

Q789 Chair: So it is asymmetric, 10 in and then three or four out, something like that?

*Gavin Patterson:* Yes. I am not even sure you would need three or four, but what I would be keen to do is to ensure that as much of it as possible is delivered through fibre and that is why I say I think part of the solution is retaining regulatory pricing freedom on NGA, because ultimately if we are having this discussion in 20 years' time I would be surprised if 10 is the right number then.

Q790 Chair: What was the number you described in terms of the requirement for capital investment that BT could not fund without that regulatory comfort and freedom?

*Gavin Patterson:* Again it depends on the solution, **so if it was a mixture of this long-range VDSL idea that we have and have been testing and of fibre, and we went to 99%, that is in the hundreds of millions of pounds.** If you went all the way on fibre we are looking at something you can count in the several billion of pounds.

Q 791 Chair: Over what period of time?

*Gavin Patterson:* We could do it we believe over the **next five years.**

## Conclusion

92. If the case can be made for a modification to the USO then, as long as the technical specification is set no greater than 10 Mbps (as it should be); evidence of demand is required before the USO is triggered and the cost per premise is capped, a revised USO would not appear to constitute an unfair burden for BT. Those premises that slip through the USO net can receive a broadband service satellite, perhaps benefitting from an extension of the existing voucher scheme.
93. However, we must learn the lessons of the experience of BDUK. Interventions by regulators and Government should not be allowed to undermine competitive build. Urban areas should not form part of the USO and the remainder, where 10 Mbps is currently unavailable, should be ranked in terms of likelihood of build. The revised USO could then be phased in over time, with priority given to those areas least likely to be served by others.





**Virgin Media**  
**June 2016**