Vodafone Non-Confidential Version

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Response to Ofcom's Call for Inputs:
Designing the broadband universal service obligation

1. Introduction

Ofcom's 2015 Connected Nations report[1] sets out an estimate that 8% of the country, rising to 48% in rural areas cannot receive 10Mb/s broadband. Historically broadband investment has focused on headline speeds, rather than universality. This Call for Inputs on a Broadband USO should be an opportunity to discuss how a more universally acceptable service is delivered, however we do not believe that an automatic outcome should be a presumption that an Obligation is the best tool to achieve this. A USO has the risk of negatively distorting existing markets, reducing choice and competition more broadly.

Competitive markets normally deliver the best outcomes for society in terms of investment, innovation and price. Therefore, policy interventions by regulators or governments should largely focus on circumstances where unfettered markets cannot be expected to deliver the optimal outcomes for society, in particular where market failures undermine economic efficiency. For example, policy interventions can improve market outcomes by limiting the abuse of monopoly power by firms, or by helping the broader impacts of consumption decisions to be taken into account in individuals' decision-making (i.e. by addressing externalities). However, regulators and governments always need to ensure that the potential benefits of policy interventions that address market failure are balanced against these potential risks of regulatory failure – poorly conceived or implemented policy interventions can distort the economic decision-making of firms and their incentives and can result in unintended and harmful consequences, reducing the overall welfare of society.

Policy intervention to address social policy issues, such as fairness and inclusivity in society, can also clearly be justified. However, in Vodafone's view, such intervention needs to take even greater care that there is no harm to the wider competitive process which can lead to unintended consequences. Interventions that are motivated largely by social policy considerations, rather than by concerns about market failure, are specifically designed to achieve outcomes that differ from those that would be observed in well-functioning competitive markets. In such situations the risk of regulatory failure are greater. In some cases, the risks associated with potential regulatory failure may be so significant that the policy intervention should not be pursued, despite the potential benefits.

Vodafone is concerned that unless it is very well designed there is a material risk that intervention in the form of the broadband USO is more likely to harm consumers and citizens than it is to benefit them. This is particularly the case since the case for intervention is largely based on social policy considerations rather than concerns about market failure.[2]

As we set out in more detail below, if broadband USO funding is used to 'over-build' existing networks there are risks of considerable unintended consequences to future investment and competition – ultimately to the detriment of the very citizens and consumers the USO is intended to benefit. However, as we also set out,

[1] http://stakeholders.ofcom.org.uk/binaries/research/infrastructure/2015/downloads/Fixed_broadband_services.pdf
[2] There may be potential concerns about externalities, but these are considerably weaker than the externalities associated with the traditional voice-focused USO. We consider this issue further in the funding section below.

designing an approach to USO funding that avoids such risks is likely to be difficult – there are inherent tensions with universality, minimizing the net cost of the USO and ensuring consumers have choice. This highlights the very significant risks of regulatory failure associated with implementing the broadband USO.

Therefore we urge Ofcom to:

- Understand how much more **commercial build is possible** and what can be done to support it to both reduce the cost of the USO and reduce investment market distortions.
- **Minimize** retail **market distortions as a result of a USO legal designation**.
- When considering any net costs, take account of the long term business case not just the instantaneous costs.
- Ensure that a Universal Service is future proofed and does not leave customers **stranded on legacy technology**.
- Avoid market distortions by ensuring that any cross-industry funding results in an **equity stake in the assets**, rather than a cash gift to the regulated party.

Section 2 of this document discusses the risks associated with implementing a broadband USO without understanding whether alternative means can address the problem.

Section 3 looks at technology neutrality.

Section 4 looks at the risk of Market Distortion if funded USO over-builds competing networks.

Section 5 discusses how to avoid retail market distortions that could occur as a result of the legal designation in the retail market.

Section 6 looks at mechanisms for funding.

2. The broadband market - why are we considering a Broadband USO?

On the face of it there are similarities between the voice USO and the broadband USO. Both aim to ensure universal connectivity across the whole of the UK, but for different reasons.

However we would urge Ofcom and Government to be cautious before implementing a blanket broadband USO without:

- understanding what more can be done to support commercial built (by BT or others);
- analysing the impact of market distortions on network investment and retail market competition as a result of a Broadband USO;
- minimising the need for third party funding; and
- ensuring that competitors are not subidising a third-party's balance sheet through an industry fund, but instead can invest in an equity stake in that asset.

2.1 The voice USO – is it a burden?

Much could be written about the current USO. When Ofcom last reviewed it over a decade ago, it found there was no net cost burden, assessing that costs and benefits broadly cancelled each other. The costs associated

with supplying the voice USO to uneconomic geographies was estimated at approx. £10m per annum. Other USO provisions such as providing services to uneconomic customers cost BT's retail divisions more than this, however the benefits were found to net off the total costs.

However there is no register of uneconomic geographies, no register of lines which are provided outside a commercial case (apart from BT's own records where it has asked the customer to part pay where costs have exceeded £3400).

And in those markets where Openreach provides Universal Service it does so with a high level of profitability. BT's latest published regulatory accounts describe a £1bn profit and a 10% return on MCE for the copper market which include all voice lines. If there is a high cost burden as a result of some activities, it is being well masked by healthy returns on other activities. This is consistent with there being no net cost burden to the current voice USO.

We can conclude therefore that the current USO is not so much a burden on Openreach, more of a fundamental part of its business plan and strategy. In reality it aligns fully with its commercial raison d'etre – to provide network access. If Openreach's business strategy was not to provide network access, we might wonder what it was doing every day; and the fact that it has a regulatory obligation to provide Universal Service, appears not to affect the profitability or viability of its business.

2.2 Broadband investment

However what is fundamentally different is Openreach and BT's attitude to voice and broadband investment. The voice USO is fully embraced as part of its business and in fact the business operations are focused on providing it. However Openreach's approach to broadband is such that it looks for a commercially viable business case (defined by BT), rather than universality.

This has resulted in a situation where BT has not been motivated to invest in better quality of broadband in some locations. At the same time it is often not viable for other parties to invest in competiting infrastructure without the ability to reuse existing infrastructure assets and struggle with risky business cases, due to the risk of future overbuild by BT.

Understanding why commercial investment has not taken place in some areas is a pre-requisite to understanding how a solution may be found – we should not automatically presume that a USO is the only solution. Rewarding a reluctance to invest with further funding seems perverse and will lead to significant market distortion in both network investment and retail competition.

2.3 Understanding the existing broadband market structures is an important first step

The UK's broadband infrastructure is characterised by a high degree of variability between the range of services that are currently or likely to be available at a given address. Exchange based copper; FTTC, FTTP and HFC (cable) are the predominant fixed line technologies that provide broadband in the UK. A household's experience will depend on BT's willingness to invest, historic cable investment, location of premises in relation to exchange and cabinet. An individual has no ability to influence what is available to him.

The Government has set out an ambition to put in place a USO that allows an individual to request a 10 Mb/s service to their home – addressing some of these variances in technology by creating a minimum available service definition

This looks like a sensible policy ambition. Indeed it would appear to be a sensible commercial ambition. However such a policy intervention risks distorting investment decisions and competition and stranding customers on what will become legacy technologies.

2.4 BT's view of commercial viability should not be the test for USO

BT makes very healthy returns from its fixed network investments. Frontier Economics report[3] for Vodafone highlights returns for BT in regulated access markets over and above the expected Return on Mean Capital Employed which amount to over £6bn in the last 10 years.

Ofcom has recently found[4] that costs allocated to BT's wholesale network services in regulated access markets included costs that, in Ofcom's view, should have been excluded and as a result has recently proposed reducing costs allocated to regulated markets by £262m per annum.

BT has recently returned £258m of state aid received through BDUK projects, suggesting that these projects were not so risky or commercially unviable as previously understood.

It is clear that BT activities are highly profitable, much more so than has been previously recognised in regulatory and Government policy. Before there is any consideration of providing BT with further funding we should understand further which activities are really commercial viable and how commercial viability can be improved. It is not acceptable to simply accept BT's view. We discuss this further in chapter 5 of this document.

3. Future proofed technology neutral solutions – is it possible?

3.1 Whatever is appropriate today will require upgrades tomorrow

Services that are deemed right today will be guaranteed to be wrong tomorrow – higher peak bandwidth or more sustainable throughtputs will be expected in order to keep up with technological and societal norms. Unless the initial Universal Service is implemented using easily upgradeable technology then there is a fundamental risk that it needs to be revisited on a relatively frequent basis.

Vodafone is concerned that any third party funding mechanism gives rise to the risk of technology cul-de-sacs. Funding is used to upgrade the technology in order to supply 10Mb/s; however that technology cannot be further upgraded without considerable expense. The provider has the option to either (1) spend money to further upgrade (at risk of looking like the original funding was wasted) (2) not upgrade the customer and the customer falls behind market and headline rates further or (3) seek further funding to upgrade the customer. Isolating the 10Mb/s service and the location of those in receipt should be avoided.

For this reason, whilst putting in place a mechanism allowing for review of the service standard is important, understanding 'what happens next', is of vital importance to the structure of any scheme.

3.2 Technology Neutrality is fine but investment cases are technology specific

Whilst the service might be defined in technology neutral technical terms, the funding mechanism and the legal structure put in place will all result in technology specific solutions. For instance:

[3] http://mediacentre.vodafone.co.uk/pressrelease/frontier-economics-report-into-bt-overcharging/
[4] http://stakeholders.ofcom.org.uk/binaries/consultations/cost-attribution-review/summary/review-bt-cost-attribution-method.pdf

1. Use a existing technology, to provide a service that is below the market norms – e.g. using a cabinet based solution would require proportionally little incremental capex, but could limit future upgrades by taking us down a technology cul-de sac.
2. Use a niche technology solution (e.g. satellite) that will deliver the servce but at a higher prices than the norms in the retail market today. Capital costs of delivering the service are low, but reoccurring operational costs are relatively high.
3. Use a transformational technology (e.g. FTTH) to supply not just the 10Mb/s capability but substantially more than this. Whilst overall costs are higher, the asset life of 25-50 years would indicate a lower unit costs.

Therefore the definition and scope of the legal structure, commercial funding model or subsidy will influence the technology that is used, even if the service description is defined in technologically neutral terms.

4. USO funded over-build must be avoided

4.1 Ensuring that the approach to the USO is compatible with dynamic efficiency improvements is important – failure to do so would undermine Ofcom's strategic aims

Economic efficiency can be thought of as comprising of three main dimensions:

1) Allocative efficiency is achieved when the prices for goods and services reflect the forward-looking costs associated with producing those goods and services, taking into account any costs and benefits associated with consuming the goods or services that arise for society, but not consumers or producers of the goods or services (i.e. externalities)
2) Productive efficiency is achieved when firms produce output at the lowest possible cost.
3) Dynamic efficiency improvements occur over time as investment and innovation, for example arising from increased competition, result in the development of new goods and services, and technological advances that make the production of current and future goods and services less costly. Dynamic efficiency can be related to productive and allocative efficiency,[5] but it is often helpful to identify it as a separate type of efficiency.

Telecoms markets are typically characterized by rapid changes in technologies and customer needs over time. As a consequence, large and often repeated investments in long-lived assets (many of which are fixed and sunk in nature) are required.[6] This means that dynamic efficiency considerations are of particular importance when considering policy interventions.

If investors are to be persuaded to invest in such assets, they need to have a reasonable expectation of recouping the costs of their investment. The approach to policy intervention will form part of investors'

[5] Productive and allocative efficiency are sometimes collectively referred to as 'static efficiency'.
[6] Consistent with this view, in its Digital Communications Review initial conclusions document published in February 2016, Ofcom sets out that: "The UK's communications sector needs significant investment to meet the needs of people and businesses and to avoid being left behind by our international competitors." (paragraph 1.18).

decision making given its potential to impact on the recoupment they can expect from their investments. Therefore, ensuring that policies are consistent with investors having a fair opportunity to recover their efficiently incurred costs is an important element of creating an environment that promotes the investment required to deliver dynamic efficiency improvements. If investors perceive policies may unfairly undermine their opportunity to recoup the investment costs, they are unlikely to be prepared to make those necessary investments.

In its Digital Communications Review initial conclusions document ('DCR') published in February 2016 Ofcom recognizes the importance of ensuring that all operators have a fair opportunity to earn a return on their investments:

> *"We will ensure that all communications providers building new networks have a fair opportunity to make financial returns that reflect the risks and costs incurred."*[7]

Investor expectations are not only informed by government or regulatory policy directly related to the investment opportunity in question. The broader policy approach, and any uncertainty or inconsistency associated with it, is also likely to play a role in forming general investor expectations for the future. Therefore, a policy decision that in and of itself may appear to relate to a relatively small market or group of consumers may influence investment decisions across a much bigger set of markets or consumers if it influences investor perceptions of policy-related risks more generally.

As set out above, many of the investments required in telecoms markets are fixed in nature (i.e. they do not vary with volumes). This means that productive efficiency considerations are also important. Inefficient duplication of network assets can result in inefficient levels of asset utilization and therefore higher costs of production.

To the extent that the broadband USO is designed to improve economic efficiency[8], it is most closely related to allocative efficiency concerns – related to the presence of externalities. However, as we set out in the following paragraphs, it also has the potential to distort competition and have a detrimental impact on productive and dynamic economic efficiency as a result of:

- funding inefficient network duplication (or 'over-build') in areas where there is existing commercial deployment of services that meet the minimum USO standards; and
- Thereby, undermining the decisions made by investors in those existing commercially deployed services.

4.2 Areas that are 'uneconomic' for the USP are not necessarily so for other operators

Commercial services may emerge in areas that an operator seeking USO funding (most likely to be Openreach) considers to be 'uneconomic'. Different operators may be able to identify different technological or operational approaches that are either not available to other operators or, for various reasons, are not considered commercially attractive. For example, an alternative operator may have different wayleave options to the operator seeking USO funding.

[7] http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf, paragraph 1.25.

[8] As opposed to address some form of broader social fairness concern.

There are already a number of examples across the UK of deployments in areas that Openreach has not chosen to roll out super-fast broadband solutions. For example:[9]

- Gigaclear – started in 2010 Gigaclear provides FTTP[10] broadband services to rural communities starting at around £40 per month. As of the end of 2015 Gigaclear had 27 rural networks in operation, with a further 39[11] in construction, in Oxfordshire, Kent, Cambridgeshire, Rutland and Northamptonshire ;[12] or
- Broadband for the rural north 'B4RN' - started in 2011 by a local volunteer group, B4RN is run as a community benefit society again providing FTTP broadband services for around £30 per month to communities in Lancashire, North Yorkshire and Cumbria.[13]

In each case these operators identified a commercial solution that met the needs of the community in a way Openreach chose not to do.

In the DCR Ofcom set out its intention to require BT to allow easier access for rivals to run their own fibre cables along BT's poles and ducts in the future. Ensuring that there are effective arrangements to allow other operators such access to Openreach's ducts and poles may enable further such innovative, market-led ways of providing services in areas that Openreach does not consider there to be a commercial rationale for its FTTC roll-out.

Although in most cases the broadband USO requirements are likely to be met by fixed broadband solutions (which in a number of cases will involve using Openreach's copper access network for at least the final drop), 10Mbit/s broadband connections could in principle be provided using other technologies (e.g. 4G LTE mobile broadband), as acknowledge by Ofcom in the DCR:

> *"There are a variety of ways in which new technologies, or new approaches to network deployment, can improve availability for the hardest to reach. We will do what we can to support these commercial solutions."*[14]

Therefore, market-led solutions, that provide services to the USO standard, based on other technologies may also emerge in areas considered to be 'uneconomic' by Openreach.

It is important that the implementation of any broadband USO does not undermine such solutions, and the potential for (undistorted) competition and innovation that they can provide. We note in this context that Ofcom also appears to consider such solutions to be strategically important for the future of broadband provision in the UK. In setting out its vision of a "*strategic shift to large-scale investment in more fibre*" Ofcom explains that:

> *"We will help create more choice for people and businesses, while reducing the country's reliance on Openreach. A major strategic shift will encourage the roll-out of new 'fibre to the premise'*

[9] These examples exclude any potential cases where the footprint of Virgin Media's cable network extends into areas considered to be 'uneconomic' for FTTC roll-out by Openreach.
[10] As opposed to the much lower quality fibre-to-the-cabinet services deployed to date by Openreach.
[11] This excludes additional rural networks being build by Gigaclear with support from BDUK Superfast Broadband grants in Gloucestershire, West Berkshire and Essex.
[12] http://www.gigaclear.com/about-gigaclear/
[13] http://b4rn.org.uk/about-us/
[14] http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf, paragraph 3.40.

networks to homes and businesses, as an alternative to BT's planned innovation in copper-based technologies. As part of this, BT will be required to open up its network, allowing easier access for rivals to lay their own fibre cables along BT's telegraph poles and in its underground cable 'ducts'."[15]

4.3 USO funding should not be awarded where there is a risk of inefficiently duplicating infrastructure commercially deployed by other operators

There are likely to be areas of the country that the USP (which is most likely to be Openreach, or at least Openreach will be the largest USP) may consider to be 'uneconomic' but for which commercially provided services[16] are available from other operators. Where these strategically important services are already provided, or will be provided soon, the 'safety net' that the USO is intended to provide is not necessary. However, if the USO funding arrangements are not well-designed, USO funding may be used by Openreach to inefficiently duplicate this commercially deployed infrastructure (i.e. 'over-build').

Subsidising over-build by Openreach will give rise to distortions to competition and undermine economic efficiency through:

- reduced dynamic efficiency - undermining the (commercial) investments already made by non-USP operators will reduce incentives to invest and compete; and
- reduced productive efficiency - potentially inefficient duplication of infrastructure (e.g. fibre).

The USO therefore needs to be implemented in a manner that protects those that have commercially invested in strategically important infrastructure from over-build by the USP. Such an approach would be consistent with the strategic approach set out by Ofcom in the DCR:

> *"A number of smaller providers are also deploying 'fibre-to-the-premise' (FTTP)... Ofcom will build on this progress. We will make it easier for telecoms providers to invest in advanced, competing infrastructure, while protecting those who have already made investments."*[17] *(emphasis added)*

The risk of over-build is not just a theoretical issue. There have been concerns of Openreach using existing broadband subsidy schemes (e.g. BDUK) to over-build existing networks. For example, as a result of poor service using the Openreach network, residents of three villages in rural Lancashire (Inglewhite, Whitechapel and Bleasdale), working with B4RN, deployed a FTTH network, with the first customers connected in January 2016. Not long following the roll out of the community scheme, Openreach rolled out its own publically-subsidized FTTC scheme thereby significantly over-building the community scheme.[18]

Such examples of over-build can be inadvertent, and due to insufficiently robust processes in place to prevent it. They can also be used strategically by incumbents such as Openreach to reinforce monopoly power in local access markets.

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[15] http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf, page 1.
[16] That exceed the minimum requirements of the USO.
[17] http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf, paragraphs 1.20 and 1.21.
[18] http://www.ispreview.co.uk/index.php/2016/02/lancashire-villages-accuse-bt-of-overbuilding-their-community-network.html/

Therefore it is imperative that we understand what more can be done to support commercial infrastructure investment (from whatever party) before any USO designation or planning commences.

4.4 It may not be possible to implement a USO that guarantees universality without damaging investment in strategically important alternatively infrastructure

Preventing over-build of existing networks needs to be a priority when designing any USO funding mechanism. USO funding should be focused on those areas (or customers) that have no existing commercial provision of services (that meet the USO standard), and are unlikely to do so in the near future.[19] It is therefore necessary to have a robust process in place to identify areas where there is existing, or planned, commercial provision of services.

In addition to undertaking policy reviews there would need to be a detailed register of assets and network connections, that would be support build and minimse overbuid.

One approach that is similar to that adopted in other countries (for example the "National Broadband Plan Infrastructure Register" in Ireland) would be to establish a national broadband register. Under such an approach the register would:

- likely record data at the Openreach cabinet level of geographic disaggregation – our assumption is that a significant proportion of USO customers will be served using fixed residential services that use Openreach's copper network for at least part of the circuit. Therefore, Openreach is likely to be (or to apply to be) the USP in many cases. Although it would be preferable to use a unit of geography independent of operators, using Openreach's street cabinets is likely to be the most practical and appropriate unit of geography.[20]
- log for each commercial (or community) operator whether it is currently able to provide services (by whatever technology), or has firm plans to provide services in the near future (e.g. three to five years), that meet the USO minimum standard by each cabinet area.
- log the number of households served by the operator in each cabinet area - ideally it would also be populated with data on the total number of households in each cabinet area so the operators' penetration of each cabinet area can be calculated.
- be run by the government body responsible for administering the USO and would not be shared with the USP(s) – to protect confidential roll-out plans from operators competing with the USP(s).
- be regularly updated (for example, operators would be asked to update entries once a quarter).

When an operator (most likely Openreach) wishes to roll out USO supported services in a new area a process similar to the following could then be adopted:

- The operator submits an application to the body responsible for administering the USO notifying it of the cabinet areas that would be affected by its proposed USO roll out plans.
- The responsible body would use the national broadband register to identify whether there are other operators already providing services, or with firm plans to launch services in the near future, in each of the relevant cabinet areas.

[19] Although even under this approach the risks to dynamic efficiency cannot be fully mitigated – while investment may be unlikely now, rapid demand or supply side changes (which are a feature of telecoms markets) could make it much more likely in the future.
[20] Cabinet-launched technology such as ADSL from the cabinet may be suitable for the broadband USO.

- If there are no operators that meet these criteria in the areas, the USP would be allowed to proceed with the proposed USO roll out.

However, in the event that there are existing operators in relevant areas, or operators with firm plans to launch services, the responsible body would then launch a consultation on the proposed USO roll out plans. The aim of the consultation would be to establish:

- the extent to which the existing operator's current services cover the cabinet area in question;
- if the existing operator has firm plans to extend its service in the near future to any households within the cabinet area not currently covered by its roll out; and
- whether the existing operator would be interested in being the USP for any remaining households within the cabinet areas not currently covered by its existing roll out and plans.

Based on the responses to this consultation process, one of two scenarios would apply, either:

- the existing operator's current or planned roll out covers all households within a cabinet area. In this case the proposed USO funding should not be awarded to roll out in that cabinet area (although the applicant would be free to roll out commercially); or
- the existing operator's current or planned roll out does not cover all households within a relevant cabinet area. This is the more likely of the two scenarios, but also the scenario that raises the most complex issues, due to the likely tensions between preventing harmful overbuild, promoting universal service, minimizing the net cost of the USO and promoting consumer choice. The potential options in this scenario are:

1. Reject USO roll out request with no other commitments from other operators – this approach prevents subsidized overbuild, but also potentially undermines the universal availability of services (as there may be households not served by the existing operator and without USO funding the USP may not choose to roll out), and limits consumer choice in the area.
2. Accept the USO roll out request with no other remedies – this would support universality of services and give consumers choice of service provider, but would lead to overbuild and the associated harmful impacts on dynamic and productive efficiency.
3. Accept the USO roll out request but compensate existing operators for the consequences of overbuild – this approach would help address the overbuild risks to dynamic efficiency and give consumers choice of service provider, but it would still risk productive inefficiency and would likely increase the net cost of the USO.
4. Give the existing operator the opportunity to be the USP in the cabinet area and, if it accepts, reject the USO roll out request. This could either be:
   - with USO funding for the existing operator – which would assist in addressing the dynamic efficiency concerns, but is likely to be higher cost than if Openreach rolled out (i.e. the net cost of the USO is likely to be higher), and consumer choice of services/provider would be limited.
   - without USO funding for the existing operator – this would result in a lower net cost for the USO (if an existing operator choose to do so), but would still result in dynamic efficiency concerns (due to having to roll out in areas it would not choose to do commercially) and limited consumer choice.

As demonstrated by these policy options, in circumstances where there is an existing operator in a cabinet area, but that operator does not have complete coverage of the area, there is likely to be a tension between:

- limiting the detrimental impacts on dynamic efficiency associated with over-build; and
- minimising the net cost of the USO and ensuring universality of service.

We are unaware of an approach to funding the USO that avoids this trade-off. However, for the reasons set out above, whichever approach is adopted should place considerable emphasis on preventing harmful over-build.

5. The USO Designation should not distort the retail market

The market today is very different to the market structure in place in 1984 or 2005 when BT (and Kingston Communications in the Hull area) was designated a Universal Service provider for voice. There are now a number of active alternative suppliers using Openreach's wholesale services to provide wholesale services. This is important in the context of the USO because the cost of supply fall on Openreach whereas the benefits of the designation are enjoyed by BT Consumer. Therefore is a considerable risk that a future designation of BT as the Broadband Universal Service provider could lead to fundamental distortions of the retail broadband market. This would be further exacerbated if an industry cash fund was put in place that would subsidise Openreach's investment without taking into account positive impacts on BT Consumer, such as increases in market share.

One solution to this could be that:

- Ofcom could conduct its review of the broadband USO and designation of USPs at the same time that it conducts its review of the wholesale broadband access markets. This may enable Ofcom to identify a wholesale geographic market which is co-extensive to the market designated as requiring a retail USO remedy;
- Ofcom could implement the wholesale obligations underpinning the USO as a separate remedy ("USO-area remedy") based on existing SMP obligations; and
- Ofcom could designate a number of *nationwide retail* USPs as the USO provider,[21] together with whatever obligations were felt necessary, and enable the end-user to select the CP from which they want to access services. Note that, as long as these obligations were underpinned by appropriate wholesale obligations, there would be no need for such obligations to be particulary onerous.

Retail market distortion as a result of the structure of a legal designation by gifting market share to a single retail provider must be avoided. Additional indirect benefits of being a single retail Universal Service Provider are discussed below and should be factored into any analysis of retail market distortions.

5.1 Indirect Benefits of the USO could distory the retail market

In addition to the direct USO costs, which are discussed in the section below, one also needs to consider the indirect benefits that are derived by being a single USP. If the indirect benefits outweigh the direct costs then there is no net cost of the USO. The indirect benefits that have recently been considered in Ireland (and are substantively the same as were considered in the UK in the 2005 review) are:

- Brand recognition – the ability to charge a premium from USO branding benefits.

[21] As discussed above taking into account the concerns about overbuild.

- Life-cycle – keeping unprofitable customers that become profitable over their customer lifetime.
- Ubiquity – retaining customers moving from uneconomic to economic areas.
- Marketing – benefiting from corporate branding and logo display from uneconomic activities.

Vodafone would expect these benefits to continue to be relevant. In Vodafone's experience by far the largest of these is likely to be the greater brand recognition that a single USP can achieve through its prominence as the single provider, both amongst its existing customers and the public as a whole. This could be in the form of increased corporate reputation, and/or more positive views towards the USP's brand (over and above that related to the scope of its services in the counterfactual). It is important to emphasise that this brand benefit is compared to a counterfactual in which the USP stops providing service to certain parts of the country. And, if the USP were to stop providing service one would expect there to be a considerable negative impact on its brand, as evidenced by the controversy surrounding the closing down of Post Offices or bank branches in rural areas.

Greater brand recognition may lead to increased loyalty amongst some customers, allowing the USP to enjoy a greater degree of market power than it would have had otherwise. This would allow the USP to increase its profits by: (i) charging slightly higher prices for services than it could do otherwise; or (ii) providing a lower quality of service and by extension, lower cost service at a given price.

Vodafone recognises that there is considerable complexity in calculating the impact of market distortion whether through direct or indirect brand recognition benefit, not least due to the hypothetical situation that is necessary to consider in the counterfactual. However, in our view it is critical that this is assessed and taken into account, not when designating the USO, but in determining the structure of any market intervention.

6. USO costs must be forensically understood

Vodafone is very concerned that the USP, which is very likely to be BT for many parts of the country, should not be afforded the opportunity to use the broadband USO to receive funding that is inappropriate and unjust. Experience has shown that BT has used any latitude in cost allocation and calculations to enrich itself. Vodafone would expect BT to be incentivised to do the same here and seek to claim inappropriately for large USO costs. To avoid this it is important that significant constraints are put in place to ensure that the costs of providing the USO are documented forensically and that the costing methodology should be specified precisely and in funded through industry through an equity scheme, the assets are similarly recorded.

6.1 Only the net costs which are avoidable should be considered

Conceptually the net USO cost should be calculated considering all the costs and revenues of the USP in the factual scenario, in which it has the USO, compared to the counterfactual scenario in which the operator only invests to provide services to those areas/customers that it deems are commercially attractive.

Importantly this means that, when calculating the net direct costs of the USO: (i) it is important to include all revenues that the USP is able to derive from using the USO infrastructure; and (ii) only the costs that are incremental compared to the counterfactual should be included i.e. those that the USP would avoid if it did not have the USO.[22] So, to give a specific example, as regards the costs of backhaul, only the additional costs

[22] As discussed below, the USO activities should be defined to include all those services that are provided to areas or customers which are uneconomic.

that need to be incurred to provide the USO activities should be included (those that would be avoided without the obligation). In particular, backhaul costs should not be based on average costs and, should not make any contribution to costs that are fixed and common with the non-USO activities[23].

6.2 The USO cost should be calculated annually rather than upfront

The net direct cost of the USO has historically been calculated by considering the revenues and costs allocated to units of service provision in each year and calculating if the costs exceed the revenues. In particular, calculating the cost of the providing universal access services has historically been split into:

- The cost of uneconomic areas – areas for which the revenues do not cover the avoidable costs.

In Vodafone's view the same broad approach would be appropriate for the broadband USO, although, as described below, Vodafone considers that a considerable number of changes are required to make it fit for purpose for the broadband USO, and to constraint the USP from gaming the system by e.g. overallocating costs to the uneconomic activities.

The most obvious alternative to a system in which the costs of providing a universal services are calculated annually is one of calculating the net additional costs (compared to the counterfactual) upfront and providing the funding to the USP before roll out. Such an approach would be similar to the BDUK process.

Vodafone considers that this approach has serious problems and should not be considered for the following reasons:

- To use a pre-funding approach it would be necessary to determine to what degree the USP would have invested absent the USP designation.
- Where it is believed that the USP would not have invested it would then be necessary to understand the (uncertain) future costs and revenues from those uneconomic activities. These factors would be difficult to determine with any certainty.
- The USP would have the best information on these factors but would have limited (if any) incentives to reveal this. For example, one cannot rely on the USP's existing investment plans to determine the counterfactual – the USP will specify such plans with the knowledge that USO funding is available if its analysis does not show a commercial case for roll out to areas.

Such concerns have critically affected the BDUK process and Vodafone believes that it is in the industry's interests to avoid getting into such a situation again. We understand that BT used Phase 2 of the BDUK process to reduce its planned commercial roll out. For example, Herefordshire and Gloucester, Shropshire and Rutland reported reductions of 5% of total county premises covered by BT's commercial coverage. Suffolk and Sussex also reported deductions in planned commercial coverage.

The National Audit Office found that BT had overestimated the costs of Phase 1 rollout by 38%,[24] thereby inappropriately reducing the contributions that BT should have made to the BDUK rollout and increasing the amount of State funding that it received.

[23] By non-USO activities we refer to services that are provided to areas or customers that are commercially viable without the USO.

[24] https://www.nao.org.uk/wp-content/uploads/2015/01/The-Superfast-Rural-Broadband-Programme-update.pdf paragraph 3.7

6.2.1 A rigourous approach is required to determine whether areas are uneconomic and require funding

As described above, USO funding should be focused on those areas that have no existing commercial provision of services (that meet the USO standard), and are unlikely to do so in the near future. Since we expect that FTTC will be the main technology used to deliver the broadband USO, it makes sense for the geographic unit for such conisderations to be the Openreach cabinet area – we would expect BT to make decisions on a cabinet by cabinet basis about whether rollout is commercially viable or not.[25]

As set out above, in circumstances where there is an existing operator in a cabinet area, but that operator does not have complete coverage of the area there are a number of potential policy options. Depending on the policy option chosen this will specify whether, in principle, the USP is able to claim funding for the area or not. For areas that are potentially eligible for funding it is necessary to ensure that there is a process by which there is appropriate constraint placed upon the USP when making potential claims for USO funding. We consider that an approach along the following lines would be appropriate:

- First, before investing in a geographic area for which the USP wishes to claim funding it should provide a basic business case to provide evidence that the area is uneconomic i.e. that the future costs of enabling a cabinet are greater than the increase in revenues from providing the broadband USO, in NPV terms. This should be forensically examined in order to ensure that assumptions, costs, thresholds and revenues are robust.
- Second, the USP must ensure that all capitalised costs are allocated at the cabinet level i.e. the incremental costs for digging fibre to that cabinet and putting in equipment in the cabinet are kept separate from the costs of activities in other geographic areas. This should be feasible since, in practice, we understand that most operators (including BT) outsource such activities to third parties. The USP can thus insist that third parties invoice separately for work undertaken at the cabinet level.
- Third, the USP must ensure that any network maintenance costs are directly allocated at the cabinet level. This will require agreeing a precise methodology for doing so with the USP.
- Fourth, the USP may only claim for the net direct cost at the cabinet level. In Vodafone's view it is necessary to consider the total revenues at the cabinet level minus the total costs at the cabinet level (on a period by period basis), taking into account all activities (broadband USO activities and non broadband USO activities). We consider that it would be entirely impractical for the USP to attempt to calculate the incremental revenues and incremental costs of the broadband USO alone. This would require cost allocation between broadband USO activities and non broadband USO activities. Such cost allocation would provide the USP with far too much freedom to determine the net direct cost.
- Fifth, the USP may claim annually for the net USO cost. However, these costs need to be audited by a independent auditor that is instructed by Government or Ofcom.
- Sixth, if the USP is BT, it may only claim for USO funding if it provides wholesale access to the broadband USO products on a bitstream basis.

[25] Where BT rolls out broadband technology to a cabinet area this does not mean that all subscribers are able to get a service that is consistent with a broadband USO. There may be additional activities required (such as deployment of Fibre to the Final Drop) to address groups of customers for which it is uneconomic to provide such services.

- Seventh, in the event that industry funding is sought, those parties should be provided with an equity stake in the investment and provided with detailed account of their investment on a regular basis.

We note that calculating the annual cost of the USO raises some issues if the USP has to invest a significant amount in new infrastructure and where there are likely to be, over time, additional services that the USP is able to provide over that infrastructure. If the infrastructure cost is allocated simply to individual years (e.g. using straight line depreciation), it may appear that certain areas are unprofitable in early years, when this merely reflects an accounting distortion (an economic approach to depreciation would allocate little cost in the early years).

7. Broadband USO funding should not distort the market further

In Vodafone's view the broadband USO should not even be considered for funding unless the USP can show unequivocally that it has had to undertake activities which it would not otherwise have undertaken without the USO, and can provide clear incontrovertible evidence of the additional net costs of undertaking those activities are not commercially viable. We cover the issue of calculating the net costs of the the USO in more detail in the next section.

Even where there is incontrovertible evidence of additional net costs from a broadband USO, in Vodafone's view:

- Self funding by BT should be considered before any external funding. BT's excess profits should be used to fund USO investments. Self funding also provides strong incentives for productively efficient outcomes.
- However, if the Government considers that external funding is required to support a broadband USO, in Vodafone's view it would be appropriate to use Government funding to do so.
- If the Government insists on that telecoms operators should contribute, the funding should be on an equity investment basis, not an industry fund to primarily cash subsidise BT's P&L.

Below we first consider the merits of each funding source and then explain in further detail each of the points above.

7.1 Framework for considering the appropriate funding mechanism

Similar to the considerations of over-build, in Vodafone's view the framework for determining the appropriate funding arrangments for the broadband USO should be largely motivated by economic efficiency considerations. In particular, in line with the considerations in the over-build section above, the source of universal service funding should:

- take into account dynamic efficiency by ensuring minimum distortion of the investment decisions of the USP and other operators;
- promote productive efficiency by providing incentives for cost reduction, either by the USP (or potentially by Government); and

- ensure allocatively efficient consumption decisions are not distorted, by sharing the costs in a way that minimises such distortions.

In addition, there are important considerations about the practicality of the USO funding mechanism including:

- whether it is cost effective to administer; and
- providing transparency in how contributions are determined if the funding is sought from multiple parties.

7.2 The broadband USO should be funded by BT

BT has benefited enormously from Ofcom's approach to the setting of regulatory prices. Various aspects of charge controls have allowed BT to make excess profits including: significant outperformance of efficiency and volume forecasts; anchor pricing in charge controls; the timing of the actual investments compared to the assumptions within the charge controls; modelling errors; and changes in accounting policies. It is right that certain incentives are put in place to improve economic outcomes, but not that inappropriately high returns are allowed through inaccurate assumptions which generally err on the side of caution and support BT. Vodafone believes that some of the windfall would be most appropriately used for Universal Service investment. Self funding by BT is appropriate because it:

- ensures there are the strongest possible incentives for cost reduction. This is critical to achieve productive efficiency. It also provides the greatest incentive for the USP to develop additional services which can be offered over the USO infrastructure.
- ensures that the operator that will most gain from the hard to quantify upsides from additional rollout (provision of new access services, etc) is responsible for the costs.
- avoids the costs of (i) calculating the USO cost annually (ii) setting up fund (iii) determine the size of contributions to the fund. Where clawback is required (see the analysis of the USO costs below) it also avoids the difficulty of determining how refunds should be determined.

If the costs of the USO are modest it would be efficient to avoid incurring additional costs.

7.3 The rationale for the Broadband USO relates to social policy and wider economic competitiveness considerations which are more appropriately funded by Government than by industry

As mentioned above, the rationale for market intervention in the form of a broadband USO is based largely on social policy objectives rather than economic efficiency considerations. This differs significantly from the traditional voice-focused USO, for which externalities were a more significant concern. A key element of the rationale for the voice-focused USO was promoting economic efficiency by internalizing the network externalities associated with voice telephony.[26] However, the main rationale for the broadband USO is due to social equity considerations, or externalities related to the wider competitiveness of society.

[26] There is a network externality because all users benefit from more users being connected to telecommunications networks due to the presence of a USO – there are more people that users can call.

In line with this, the Europe 2020 Strategy has emphasized the strategic importance of broadband deployment to promote social inclusion and competitiveness in the EU and the Digital Agenda for Europe (DAE) sets out the socio-economic benefits of broadband, including its importance for social participation and employment:

> *" The objective of this Agenda is to chart a course to maximise the social and economic potential of ICT, most notably the internet, a vital medium of economic and societal activity: for doing business, working, playing, communicating and expressing ourselves freely."*[27]

The World Bank has also identified broadband as a Service of General Economic Interest with wider economic impacts:

> *"Broadband has been increasingly recognized as a service of general economic interest in recent years. Broadband's economic significance can be put into context by referring to similar changes in other areas of infrastructure, such as road, rail, and electricity. Each of these infrastructure services transforms economic activities for citizens, firms, and governments; enables new activities; and provides nations with the ability to gain competitive and comparative advantages."*[28]

In Vodafone's view, policy intervention that is based on such broader social policy objectives or considerations of wider competitiveness of society should be funded from broader revenue sources in the form of State aid rather than through cross-subsidy from other parts of the telecommunications industry.

The European Commission has stressed on the need for using public financing in line with competition and State aid rules in order to meet such objectives of common interest:

> *"...the DAE objectives cannot be reached without the support of public funds. For this reason, the DAE calls on Member States to use 'public financing in line with EU competition and State aid rules' in order to meet the coverage, speed and take-up targets defined in EU2020."*[29]

7.3.1 Government funding ensures alignment between the party that makes the decision on the scope of the USO and the financing of that decision

Vodafone is concerned that the costs of the broadband USO may increase considerably, particularly if the Government decides to vary the nature and scope of the universal service. Government funding would align the party determining the scope of the USO with the financial responsibility for funding the USO. This would provide much stronger incentives for Government to consider carefully decisions which increase the costs of providing the broadband USO. If the Government is not responsible for funding, as other entities are picking up the bill, there are potentially misaligned incentives, which could lead to large increases in broadband USO costs driven by political motivations rather than economic efficiency considerations.

There is a risk that the costs of providing a broadband USO may be more considerable than a traditional USO. Historically, as the USO has been defined to cover a scope of services that, as regards provision of services to retail customers, can be met using the traditional POTS network, this means that the net cost of the USO has been modest: BT will have had to invest in some additional connections, but the majority of spend would

[27] Digital Agenda for Europe.pdf, page 3
[28] World Bank -Information and Communications for Development 2009- Economic_impacts_of_Broadband.pdf
[29] ..\Commission statement on using State Aid for broadband.pdf, paragraph 2

have been replacement capex and opex. However, if BT (or some other USP) has to invest in new network and technology to meet the broadband USO this may mean that the direct cost of the USO increases considerably. Moreover, Vodafone has a significant concern that these costs may rise over time, particularly if the network investments required to meet the broadband USO are more significant e.g. FTTH.

Consumer expectations of minimum speed and quality are likely to continue to rise, driven by advancements in technology such as cloud computing, video on demand services, etc. and by further network roll out by operators (in economic areas).[30] If Government determines that the scope of the broadband USO needs to match wider consumer expectations, this is a significant risk that this continues to require further investment in new networks and technologies, with potentially large increases in costs. In this context, Ofcom's Digital Communications Review has provisionally found that 10Mbit/s is the appropriate level at present for a broadband USO but that the level of performance delivered by the USO will need to increase over time, particularly over a ten year time frame.

> *"We will prioritise supporting plans for a 10Mbit/s broadband Universal Service Obligation (USO) to ensure that all people and small businesses have access to decent broadband speeds. Over time, we expect that the USO will need to evolve to ensure all consumers and businesses benefit as technologies and services improve."*[31]

7.4 Ensuring minimum market distortion and socially equitable contribution

It is important that the broadband USO funding mechanism should cause least market distortion. If there are significant net costs of the broadband USO, and these costs are imposed on telecoms operators other than the USP via an industry funding mechanism, there are considerable risks of distorting competition between telecoms operators by:

- harming allocatively efficient consumption decisions, i.e. changing relative prices for end-users, thus altering their behaviour and disrupting efficient operation of markets;
- affecting operators' incentives to invest, if the expected profits from providing services is materially changed.
- It requires competitors to fund a third party investment which is a simple transfer of profit from one part of the industry to another.

If the Government determines that some external funding is necessary, and that this should come from industry (rather than from Government), it is important that contributions are determined in a way that is equitable and would lead to minimal distortion of competition.

Voice telephony USO has a direct positive externality on existing telecoms users, and by extension, on their providers i.e. the USP and other telecom operators. The utility of each subscriber increases with the number of other subscribers on the network. Additionally, as more subscribers are added by the fixed voice USO, other non-USO operators are directly benefitted due to, say, call terminating charges paid to them for the calls made by the USO subscribers to their network. This means that, as regards the voice-focused USO,

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[30] The fastest available residential fixed broadband service offered in 2004 was a cable service with an advertised downstream speed of 'up to' 4Mbit/s, while in 2014 it was an FTTP offering 'up to'330Mbit/s

[31] http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf, page 19

there is potentially some rationale for USO funding coming from the wider telecoms industry (if there is a net cost of the USO and it is determined that neither the USP nor Government should fund it).

However, for broadband, this rationale does not exist. The majority of Internet traffic is unidirectional, from content providers to users.[32] Ofcom's 2015 Communications Market Report shows that Google-owned services (including YouTube) remained the most visited sites across laptop/desktop and mobile devices and BBC and Sky featured among the top ten most popular internet sites in the UK. [33] Externalities, if they are material within the communications sector, are related to the two-sided market nature of the Internet.[34] This means that the main direct beneficiaries if a higher level of broadband access is achieved through a broadband USO are content providers, not other Internet users (and their Internet providers).

7.4.1 Funding of Capital Investments should result in Equity stake

Markets would be distorted if industry is required to fund a competitors' investments without recompense. There are no material externality effects that benefit the industry at large, and given BT's track record in over–recovering from network investments, it feels appropriate that it should not do so with the added benefit of competitors funding. Industry funding should only take place on an investment basis, as otherwise it would amount to yet another windfall gain for BT. Therefore once net costs have been fully understood, should net costs be recovered from industry, this should reflect the capex nature of that investment. Vodafone and other investors should therefore receive an equity stake in that investment. An infrastructure investment fund, established to invest in USO, possibly on a voluntary basis may serve that purpose more fully. By providing access to the investments to all of the industry this could not only minimise retail market distortions and investment distortions but could potentially increase the availability of funds and allow more substantial investments. Such a Univeral Service infrastructure investment fund could in fact be the vanguard for fibre investment in the UK.

[32] The volumes of broadband traffic that are used for peer-to-peer communications are very much smaller than the unidirectional traffic and can be provided without the broadband USO.
[33] http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr15/CMR_UK_2015.pdf, page 358
[34] For an academic perspective of this see, for example, http://www.stern.nyu.edu/networks/Economides_Tag_Net_Neutrality.pdf