

Thank you for the opportunity to reply to the DCIS consultation. In answering the questions I have concluded there are a fewer and fewer reasons not to plan and take the steps to secure a transition to an all fibre access network over a 25 year period.

The responses are based on my experience of 22 years working for BT, a very rewarding but ultimately painful time at Broadband Delivery UK and subsequently assisting small businesses in not spots getting the connectivity they need.

The responses are motivated by the potential of connectivity to both transform how we work and learn, while being a source of national competitive advantage should we embrace fully the possibility.

It is a challenging subject as connectivity and technologies enable more to be delivered for a lower cost. The tendency is to go cautiously, but this caution has already delayed rollouts.

The BSG estimates for FTTC rollout in 2008/9 were £5bn for a national programme. The total costs including a £1.2bn Government contribution is likely to be less than £3.5bn. This is without any detailed scrutiny of BT's incremental capital expenditures over the period of investment. This response highlights the need that a proper verifiable record is made of the actual investment to date, and its composition, as this will help make the case to proceed with a full fibre access transition over 25 years.

It would seem odd that where the cost recovery regime supports more than £2,100 to be collected to maintain a copper pair over 25 years, than £500 of this could not be used to upgrade the medium at some point in that cycle, particularly given that fibre bundles now exist in adjacent streets.

The questions invite some repetition, which I hope I have kept to a minimum but if sections of the document are being analysed by different people then they may need to refer back to earlier answers for a more detailed explanation. The opportunity to use the planning rules to create pro-competitive provision of fibre access seems self-evident. Less evident but equally important and more difficult is the need to re-define markets and products for the future. This I have attempted to outline but those efforts would benefit from peer review.

Finally, some of my views have been influenced by my first hand witness to the behaviour of BT Group managers during my time at BDUK. The significant inflation of the milestone payments per premise passed for the state aid funded £1.2bn rural broadband project has now being reported upon by the National Audit Office and Public Accounts Committee, with more investigations to come. In my opinion the lack of transparency will continue to have a profound and unnecessary impact on rural communities and their ability to access the connectivity for which the state is mostly funding. While measures exist to reconcile milestone payments with actual costs, the cloak of secrecy under which this is being conducted suggest this needs to change so an appropriate level of trust can be established. This response outlines at least some of the measures needed. I hope they are of use to the process.

Yours sincerely

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*Q1 Views are sought on:*

*a) Is this an appropriate role for Government?*

*b) What other high level principles might the Government adopt?*

*c) What resources do you consider the Government should aim to deploy to effectively manage its role?*

We are in the middle of an ongoing revolution in connectivity and devices, where the convergence of services is rapid and the existing market definitions used by the regulator look at best dated.

Government (local and central) is a large consumer of services and a big investor in infrastructure. Government taxation in the form of spectrum auctions, and the application of fibre rates have a profound impact on the structure of the industry. Government strategy and the will of Parliament cannot be ignored by an independent Ofcom.

The UK Government has a set out to be an objective of being best in Europe. This has been acted upon through the investment of some £1.2bn of public monies in rural connectivity, with additional efforts attempting to plug gaps where the private sector is failing to invest. But best in Europe can be measured in many ways. For rural users it is the proportion of users who access fibre access services. In cities and towns it is not just access, but for example direct access to connectivity which supports 100Mbps (a gig capable) for less than £70 a month.

The challenge we are all facing appears to be one where effective competition of any sort will reveal that connectivity and devices are cheap and becoming cheaper relative to our existing contract. This process started with the installation of the first submarine cable in the c19th century and the challenge of offering more for less remains. For example, in Shoreditch the occurrence of selling something like a private circuit to one tenant in one block is enough to prevent further investment in broadband access in the same area, in case that customer should cancel their private circuit and move to a cheaper product. The technology revolution (devices, fibre as a medium, IP networking) is permitting more data to be transported over components which cost less and less.

The notion of more data for less makes investment and indeed taxation very challenging. Incumbent operators which have legacy revenues to protect have to be cautious, and must take whatever revenue it can. HM Treasury would share that caution. Once BT installs a cabinet it expects and needs to get a return, even where that cabinet becomes a barrier to improving service further, the provision of FTTP in a business park where duct exists is an example.

Under the existing regulatory regime, there appears to be an understanding between BT and Ofcom that regulation is engineered to force through about 5% cost reduction in BT pricing per annum, where BT has discretion in how costs are removed and others recovered. This seems consistent with Ofcom being able to claim that come what may, UK connectivity is marginally better than that in other mature European economies.

If the UK ambition is bigger than just outlined, then UK Government will need to be more insistent and directive in its policy making. Fortunately this does not need direct investment, but more a sense of purpose, a confidence to recognise the talent available in the UK, particularly our inventiveness and a willingness to use technology. Thus for the remainder of this response The Bit Commons assumes the Government ambition is to be best in Europe using any measure, thus

requiring more insistent direction as opposed to facilitation. This also assumes that the independent economic regulator Ofcom aligns itself to this ambition, something which is not yet evident.

For this purpose of this response and given the timescales (to 2030) The Bit Commons assumes the Government goal will be to secure the upgrade of the entire access network to fibre only, that this will be done over 25 years and wherever and whenever, competition is facilitated. Over this length of period there is no need to assess the three scenarios outlined in section 3 as the fibre access provides increased capacity with lower operational costs than the existing copper access network.

The Bit Commons would argue that BT has no particular motivation to invest in FTTP, and cannot be expected to do so and thus any policy making needs to create new conditions for what will be a new market in wholesale data transport. Wholesale data transport has the existing wholesale broadband access market as a proxy but is very different in nature, as it can have no assumption of scarcity, or no dominant player which can withhold or delay a capability. Wholesale data transport also incorporates data from devices connected wirelessly, independent of whether it is licenced or unlicensed spectrum.

*Q2 What potential opportunities are there for Government to leverage its combined buying power to support policy objectives?*

If you accept the thesis that future leadership in fibre access requires more competition and less reliance on BT then local authorities and central government could include the following actions.

The simplest changes ought to be made in the planning rules where section 106's could be used so all new developments are readied for fibre access using passives, installed by the developer at their cost and then shared by all providers. This could also be applied to refurbishments. BIS has published a very set of guidelines to aid developers. They should be applied more fully.

LA and Governments could at a pace that suits their budgets retrofit their buildings to have suitable passives installed which are maintained separately and shared by all network operators. This would reduce the reliance and expectation upon BT.

Local Government should be free to invest in duct open to all providers where BT or Virgin have either failed to maintain that duct or fail to offer access to those ducts using an appropriate wholesale product. Ofcom should be encouraged to define a new market definition of 'wholesale data transport access market' to differentiate from any existing product whose performance is limited by distances of less than 40km.

There may be a need for new market definitions and this is something central and local government bodies should support and request if not direct Ofcom to do so.

*Q3 If migration to IPV6 is required, are there any barriers to that migration and if so how might these be addressed?*

If Government outlines a timetable which is consulted upon, then migration to IPV6 can be accelerated.

*Q4 Is an ongoing disparity of broadband services inevitable? If so, should this be addressed and how might this be done most effectively?*

Disparity is not inevitable. In the short term, the level of control BT demonstrates over the BDUK process will create a great deal of disparity if this is permitted to continue, but it is within the gift of BDUK to request help in the form of changes in BT Undertakings to Ofcom, so the required incremental costs can be extracted from BT permitting the available monies to go further. BDUK should not ignore or dismiss the findings of the NAO and PAC but seek the legal assistance it needs to gain access to BT's cost data. Ofcom rather than selectively using its independence to avoid this issue, should work with BDUK to prevent possible distortion in other markets should any public money for rural areas be used for anything other than that purpose. This also applies to providing some public certification of BT's capital contribution to the rural project.

In the medium term Ofcom would amend the current Fixed line access cost recovery to 2017 such that a known proportion of the £2.2bn costs recovered are invested in maintaining and extending its duct network and replacing final sections of copper loops which have a short life cycle.

For the Longer term, the Government should call now on Ofcom for a 25 year fibre transition plan to an all fibre access network where competition and sharing of infrastructure is implemented.

Furthermore, the use of existing spectrum and re-use of existing but unused spectrum is also within the gift of Government to influence. It is not by accident that the greatest and most innovative use of spectrum has been in the unlicensed wifi bands. It suggests the cost of rural deployments could be much reduced if licensed spectrum had to be used by whatever means to provide services in rural areas.

*Q.5 How symmetrical will digital communications networks have to be in the future? Will this differ across user types? What implications does this have for fixed and wireless broadband provision?*

Different users will have different needs. The acceptance of a pro-competitive fibre transition plan would mean we would have to plan to accommodate limitations in our access to connectivity.

*Q.6 Which countries should be our benchmarks on communications infrastructure to ensure that businesses remain in the UK and continue to invest?*

I suggest you take the best in class and apply where needed. Creating the environment to invest will mean changing market definitions and working specifically to prevent BT from abusing its current dominant position. This document has several suggestion on how that might be achieved.

*Q.7 What metrics do you think should or will become relevant in comparing network performance in different countries? Which metrics should most appropriately be used as the basis to the objectives for government policy?*

In the context of a fibre access transition then the key measure is the rollout numbers. Performance assumes you are seeking to set limits. We need to discover the limits before we start setting any.

### **Section 3, Scenarios for Future Demand**

#### *Questions 8 through to Question 22*

If we accept there is even the smallest need for a fibre access transition plan then the need to discuss scenarios becomes redundant. The technology is comparatively cheap. FTTC roll out for BT was not £2.5bn capital – but £1.3bn. Full fibre rollout is likely to cost less than £500 per premise

on average. BT are recovering £2.2bn a year to maintain the copper network. With fibre now deep into the access network including the rural access network thanks to some £1.2bn + of public money there should be no hesitation in pushing ahead with a complete transition plan over a 25 year period.

*Q23 Are there factors, for example technical or unrelated to the regulatory framework, that could create bottlenecks and delay future infrastructure deployment in the UK in this timeframe, that would result in demand not being met or the UK not being seen as a leading digital nation?*

Most of the issues are to do with regulation, the definition of markets and how the regulator is managing or not managing the incumbent. Ofcom has publicly acknowledged that its market definitions are out of date but such public sentiment is not reflected in their public consultation for the next 3-4 years.

*Q24 Do you expect commercial providers to deliver future infrastructure and meet demand on a purely commercial basis, or is some form of public intervention likely?*

Some providers are beginning to invest selectively in either serving small communities in rural areas or target large urban developments. Virginmedia and BT have invested in their commercial footprints. But the nature of the technology does demand a national plan is defined and then implemented. The market can only respond to its immediate circumstance, either growing or defending its market position. The market on its own cannot be expected to absorb what are major changes unless such changes are being facilitated through regulation, policy changes and planning.

*Q25 Which current or draft legislation might prevent or facilitate the emergence of any of the scenarios?*

Question not answered.

*Q26 Do you have any views on which scenario (or combination of scenarios) is most likely and should influence the development of future strategy?*

Question not answered.

## **Section 4. Competition and regulation**

*Q 27 How might efficient investment in communications infrastructure be supported, for example by changes in the regulatory framework?*

- 1.) PIA is being re-contemplated in Ofcom's market review for business connectivity. A functioning PIA product and other remedies look to be a necessary remedy where BT sees fibre access as a premium product, rather than just a medium.
- 2.) Ofcom will need to support, in the form of amended product definitions, Cities and LA as they impose changes in planning rules which obliges developers to support pro-competitive, fibre ready, open passive infrastructures for new developments and refurbishments. Ofcom should not at least consider the building operator model, where the building owner is expected to maintain the passive infrastructure suitable for multiple operators to access and use.



- 3.) Ofcom could adjust the existing cost recovery settlement for 2014-2017 (FLAM) to ensure monies collected by BT are spent on duct repairs or extending its duct network where needed.
- 4.) Ofcom could adjust the existing cost recovery settlement for 2014-2017 to support changes in long line lengths where Broadband cannot be supported, but could be replaced by FTTP where an ATA is used to deliver PST. This is already in the product definition for an analogue line so could be used to solve problems faced by SME's in high streets and city centres.
- 5.) Ofcom could better support BDUK, by amending BT's Undertakings so that in the presence of state aid, BT is obliged to make full cost disclosures so only the appropriate level of incremental cost can be calculated. This would permit existing monies to go further.
- 6.) The assumption or acceptance that BT is an efficient operator and thus entitled to discretion on how it allocates and recovers costs should be examined. The notion of efficient operator should be grounded in a benchmark of efficiency rather than being assumed.
- 7.) Ofcom should also look at a deeper separation of Openreach from the rest of BT. BT Retails investment in football broadcasting rights should not interfere with the need for Openreach to invest in its network. The calls for reduction in regulation seem at odds with BT Groups determination to leverage its strengths as a group at the expense of rural users, the taxpayer and future competition. To reduce regulation, Openreach should be free of BT Group and their objectives. This is very evident in the Government funded rural programme where the objectives of Openreach to modernise its network is at odds with BT Groups desire to optimise free cash flow for other BT Group wide investments.

*Q28 Are any further regulatory measures necessary to incentivise the rollout of future mobile infrastructure in currently underserved areas?*

The notion of mobile or cellular already feels dated. While Ofcom envisage competition between mobile infrastructures serving 98% of premises, it would seem more appropriate to plan a single wholesale data transport infrastructure at the edge of the network where the network owner has rights to use a mix of fibre access and any unused spectrum it needs to offer a wholesale service. The lack of progress of MIP to build and get masts occupied suggests that wholesale data transport for rural areas should be managed differently. Given BT are likely to seek more funding for rural, then a switch to open book accounting supported by a change in Undertakings, then use of unused licensed spectrum should be considered and catered for in the mix.

The 4G cover obligation called for by Parliament could be adjusted further if needed in exchange for reductions in annual licence costs.

*Q29 Is there a role for a revised USO or USC to ensure that minimum consumer demand requirements are met and to reduce the potential for a new digital divide? What might this look like?*

It is difficult to avoid the need for suppliers of last resort. The USO for telephony creates that function for BT Openreach. Implicitly, we attribute companies this role without then dealing with the consequence. Creating USO for wholesale data transport outside areas designated to have competition would seem a sensible thing to consider. The concept sits more easily if Openreach is more clearly separated from BT Group and revenues collected and capital expended can be more clearly recorded and published. The Government /Ofcom could look at the 30Mbps access

capability at the edge of the network, where a lesser amount like 10MBps or 15Mbps is assured, using fibre access or wireless access. For the user what is important is that they have access to the same retail offers for kit and bandwidth. If more bandwidth is needed then satellite can be used as can signal boosters.

Consideration could be given to a supplier of last resort on a nation by nation basis, it could be 4G /5G mobile providers or indeed BT Openreach, but Openreach should be allowed access to any unused spectrum its needs.

*Q30 In terms of supporting future innovation and long term investment in infrastructure, what areas of broadcasting regulation may have served its purpose by 2025-2030 (or indeed earlier)? What future technical developments may also have longer terms implications for regulation and wider public policy?*

It is time that our BBC licence fee is split between the cost of content creation and the cost of distributing content. It may even be time for the BBC to be split in that way as the infrastructure distributing the content, particular given that infrastructure can be used to distribute other content would appear to have more utility than the content created.

For very rural users DCMS should give consideration to support the development of an integrated LNB to allow a single satellite dish to be used for TV and internet access.

*Q31 Are there changes to the EU Regulatory Framework that the UK might seek to encourage more competition in UK Markets?*

*Q32 Should Government seek changes to the European regulatory framework which put more reliance on competition law and how might this be done?*

Action should be contemplated in at least three areas;

The findings of the National Audit Office and the Public Accounts Committee regarding the BDUK rural broadband scheme suggest that where **state aid** is present, there are inadequate measures to secure disclosures on actual costs. This could be addressed by amendments to BT's Undertakings to Ofcom so the public monies can be invested with confidence and the threat of distortions in adjacent markets minimised.

The initial information supplied to Ofcom for the Business Connectivity Market review suggests there is need for an enhanced Passive Infrastructure Access product. The level of Government cash invested when compared to BT Group cash invested would suggest PIA can be actively pursued. Infrastructure sharing agreements are more common in other countries. Again Ofcom could do much more in this area. This will be needed if Government directs rather than attempts to facilitate FTTH/P.

Ofcom should support LA and cities in accommodating new pro-competitive models for fibre access by supporting in any way they can the provision of passive infrastructure for use by multiple operators on new developments. It is within Ofcom's gift to portray this as a new market as in other parts of Europe or ignore the opportunity to create competition.

One of the challenges facing the UK regulator and indeed Government is the industry players use of economic models to present 'costs' as opposed to presenting costs that can be reconciled in their management accounts. Perhaps the use of audited accounting data needs to replace econometric models in order to restore confidence in the numbers being presented by industry. It is not clear what law would best support such a change.

*Q33 In what ways can you see competition driving technological change in the UK in the future?*

*Q34 How can the regulatory framework keep up to date with new business models and changes in technology?*

There is insufficient infrastructure competition to drive any technological change. Virginmedia investment caused BT to respond with FTTC and Mobile operators are responding to one another, but technological change tends to follow investment cycles. This is why Governments if interested in establishing a national competitive advantage have to be pro-active in establishing and agreeing outcomes and the means of reaching those outcomes.

In the case of exploiting the properties of fibre access a significant amount of leadership is needed in pushing through the necessary changes in market definitions and policies that will reduce BT dominant position.

In terms of regulatory framework, the product definitions for functional broadband could be reviewed in line with what customer expect from a broadband service with supporting changes in the cost recovery regime for fixed line access to address long line lengths and customers served direct from exchanges. Furthermore a re-fresh of PIA is also needed.

*Q35 Are there any changes to legislation other than the Communications Act 2003 that would incentivise the provision of communications infrastructure?*

A change in planning rules for new developments has been referenced.

Those with an expertise in the rates on fibre will comment on that and the changes needed.

Changes in BT Undertakings to force the full disclosure of costs would permit the existing £1.2bn cash investment in BT's network to be stretched much further.

A restriction in the use of Commercial Confidentiality agreements where state aid is present is needed. Under no circumstances should local authorities should be restricted from sharing commercial data with one another.

*Q36 Would there be benefits to investments from a focus on broadband only services? Are there any barriers to the emergence and adoption of broadband only services, whilst still providing necessary access to emergency services?*



It would be beneficial to stop using the power issue as a reason not to look at broadband only services. Most devices are reliant on batteries. Shifting the debate to FTTP means any terminating device will have some backup designed in. Concepts like G.fast are reliant on reverse powering the line. We should not be restricted in our thinking by what is a legacy matter.

## **Section 5 Facilitating and encouraging investment.**

*Q37 How might copper access networks evolve over time alongside other access technologies? Is there a role for policymakers in helping manage any transition from copper to other access networks?*

There are lessons to be learned with how BT presented its commercial investment in FTTC compared to any change overall in its capital expenditure for the period concerned. It shows that BT invested little or any new incremental capital over and above what it has already scheduled. The £2.5bn capital came closer to £1.3bn and this was found largely within existing planned capital expenditure for Openreach and BT Wholesale for the duration of the programme. It is worth noting that at least 50% of the £1.3bn will be in the form of capitalised labour.

The significant lesson to be learned is that there is nothing to stop a transition activity being declared and begun. There is every reason to facilitate more competition through the measures referenced earlier.

It is important to write an official verifiable of the incremental capital investment to date, and its form. This is also true of the nature of BT's contribution to rural. If we do not, then 'investment' levels will be spun by the BT Public Relations and BT Group functions.

If it is appreciated how that total investment is no than c 60% of what BSG originally estimated in 2008/09 for an FTTC rollout with the state paying more than half the cash needed, then this should remove any hesitation we might have in pushing ahead with FTTP.

*Q38 Views are sought on whether there are any additional actions the Government should consider to ensure:*

- a) That the provision of all areas of the UK's digital communications infrastructure remains competitive in order to ensure that the UK can take full advantage of growth opportunities in the Digital Age;*

The proposal put forward on planning provisions for new build and refurbishment which support FTTP and competition should be actively pursued. The guidelines written by BIS policy makers some years ago provide an excellent starting point.

The UK should look at running centralised numbering databases for all its numbers, to aid competition convergence and innovation of Mobile, VOIP and E-NUM based services.

- b) Aside from legislation and adapting the regulatory framework to the broad sense which other actions should Government take to encourage investment in communications infrastructure?*

Changing the planning rules has been referenced several times. It worth mentioning again given it is a means to accelerate take and create competition using networking principles.

Infrastructure sharing agreements are essential and insufficient progress has been made on this particular aspect of investment.

Creating the environment where local authorities are free to invest in duct where BT has failed to maintain its duct infrastructure should be facilitated.

- c) The potential investment in the provision of digital communications infrastructure offers a suitable risk reward profile to ensure that they can be financed by the private sector.*

Several companies are making the case, but the Government and the Regulator in moving from investing in an overlay FTTC network to replacement of the PST, need to consider that BT has no motivation to invest in replacing its legacy copper assets. Therefore steps need to be taken to ensure it does not block the progress of others.

*Q39 Views are sought on;*

- a) The case for the UK to invest to gain 'early mover advantage';*

We are already behind so there is some catch up to be done.

- b) In what areas in particular the UK should aim to see investment;*

New developments and refurbishments are self-evident, as are the pro-competitive design to enable competition.

Enhanced PIA looks now as if it will be used.

The existing cost recovery for copper where Openreach recovers £87 a year per copper pair times 25 years suggests accommodating a £500 switch over per line in the same period is not an insurmountable task.

- c) Are there any actions not covered elsewhere in this report that we should consider to ensure digital communications infrastructure is in place before it is needed and such that it helps generate need.*

The amount and level of transactions conducted by Government could be outlined in more detail, to illustrate how the transformation in the delivery of Government services is to take place, be it health care, education, voting, consultations etc.

*Q.40 How can we maximise the current R&D and innovation UK landscape to help take advantage of the opportunities provided by future technologies? What needs to be done by Government and its agencies, and industry to tackle any gaps?*

UK companies have played significant parts in the supply chain for significant elements of FTTP services in the Middle East. The tubing, cabling, OLTs all have significant designs. Furthermore UK radio engineering has led the way in small cell design in the US and Japanese deployments.

*Q41 In which future communication technologies do you consider the UK has, or could achieve, an international leadership position?*

UK companies are leading the world in small cell design and the components for all optical networks. It is within the UK grasp to lead the world in these fields.

*Q42 What more could government and industry do to exploit future technologies, associated with new applications and business models?*

The UK could lead the world in creating a wholesale data transport infrastructure and an all fibre access within 25 years. This would be a source of competitive advantage for the coming generation.

End