

## FUTURE TELECOMS INFRASTRUCTURE REVIEW: CALL FOR EVIDENCE

The Government has invited views from industry, investors and consumers to inform its future approach to telecoms infrastructure. Having spent many years involved in telecoms policy in both BEIS (and its predecessors) and DCMS (but now retired), I am happy to contribute to this discussion, but now from the perspective of a consumer.

Before addressing some of the specific questions raised in the call for evidence, I have the following general comments.

This call for evidence is the latest in a line of reviews stretching back over a decade or more, either conducted by government itself or on its behalf. I would draw your attention in particular to the consultation on the Future Communications Infrastructure of August 2014 that covered a lot of similar ground and much else besides<sup>1</sup>. Many of the responses to that consultation will still have relevance to this call for evidence and I strongly recommend that these be reviewed in addition to the responses received to this call for evidence.

Whilst all these reviews have been worthy and in many cases have led to some form of action, it has proved difficult to deliver the sustained and ongoing approach that is necessary to address an issue of such scale and complexity. One might argue that it is impossible to do so, given that governments change, as do Ministers (on a more regular basis). All this leads to disruption and dislocation and may even stall progress in its tracks if the Minister involved lacks enthusiasm for the task.

There is no obvious answer to this. Perhaps some form of cross party agreement might be reached to provide continuity in approach, or perhaps some form of quasi-government agency could be created with the remit of managing public sector interest in telecoms infrastructure. However it needs to be recognised that political shifts has in themselves weakened attempts to deliver change.

Increasingly Government statements positions fibre broadband as essential to the future of the country and as a necessary requirement for business and consumer. In a post-Brexit world, many would argue that it is even more vital that the UK has the right infrastructure to be able to compete effectively and as a factor in attracting ongoing inward investment. However what we haven't seen is a shift in cross Whitehall thinking to reflect this. The fact is that communications infrastructure should be of critical interest to nearly all Whitehall departments, be that health, education, transport HMT, housing etc. There have been recent attempts to create more of a cross Whitehall approach at Ministerial level, but these have been hampered, by among other things the change in Ministers, as mentioned above. Overall though, a sustained cross government approach to telecoms infrastructure has been lacking and this is reflected in a lack of prioritisation across government.

The fact that this this review is a cross government review therefore is to be welcomed. The pan-government approach is also important because some of the barriers that hamper roll out of infrastructure, such as planning and rates, are not the responsibility of DCMS. It is to be hoped that the commitment will be there to address some of these issues, a number of which have been long-standing, to support future investment and deployment. Rates is a good example. The debate about how fibre is rated and the way in which different companies face different approaches to the rating of their networks has been going on for as long as I can remember. Some progress in this area would be truly of value.

Government of course faces multiple demands, in terms of prioritisation and possible public spending. Each of these demands will have its own advocates arguing for their prioritisation and access to public spending. For telecoms infrastructure, it has long been the case that government has seen its provision as a matter for the market, yet the market has clearly failed to deliver the outcome desired by government, otherwise the current review, and the previous reviews on telecoms infrastructure, would be unnecessary. That failure is also reflected in the need for government to intervene. The interventions have varied in nature over the years, from Taskforces, to the Broadband Aggregation Programme to the

---

1

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/346054/DCIS\\_consultation\\_final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/346054/DCIS_consultation_final.pdf)

significant financial intervention through Broadband Delivery UK in those areas not commercially attractive or viable. I will say more on the need for public sector investment in response to question 5. Suffice it to say here that it is likely to be necessary if the reference to national coverage of fibre networks means universally or near universally available. I would also reflect here that it seems curious that the government is willing to invest billions in 19th century technology, benefitting reflectively few people, that is HS2, and yet seems unwilling to consider similar investment on that scale in a 21st century technology that could benefit everybody.

It is clear through from the questions that the focus of the government remains on industry delivering future networks.

The government's invitation to provide evidence is carefully written to focus on the policy environment and creating the best investment climate. It only references the regulatory environment, noting that the review "will take account of developments in the regulation of telecoms sector by Ofcom".

However the regulatory framework has to be of significant interest to Government. The deployment of broadband and the technologies used to deliver it to date are in no small measure due to the regulatory decisions made by Ofcom. These have heavily influenced the investments that have been made and will continue to do so. There is little point in the government creating favourable economic conditions to encourage investment, if the regulatory environment is not conducive to such investments.

Ofcom's approach over the years has been to be technology neutral and to try and create competition to deliver widespread and low/reasonably priced broadband connectivity. They have been successful in this approach, but the connectivity that has been achieved is almost entirely through copper networks. Only since their strategic review has Ofcom specifically begun to focus on fibre. So far its key regulatory decision has been around improving duct and pole access for those wishing to utilise these to build their own fibre networks. Duct access has been a feature of the approach of other countries where there is a greater amount of fibre, such as France and Spain, but it is still not clear how far this will drive investment in the UK, and it is still uncertain how much of the UK duct network is actually capable of used used by multiple users. Ofcom has also forced the separation of BT Openreach, and there seems to be a view that this may result in different decisions by Openreach in terms of investment in fibre. However it needs to be kept in mind that Ofcom justified the separation in terms of addressing competitive distortions that couldn't be addressed by other means, it was not to drive investment in fibre specifically. Openreach separation doesn't change the economics of deploying fibre, the investment decision will still rely on whether an acceptable rate of return can be achieved, whether Openreach's customers are willing to pay and whether BT investors are happy for such investment to be made.

If the government wishes to see widespread deployment of fibre networks, then it cannot ignore the regulatory framework and by extension the role of Ofcom in determining that framework. Ofcom's independence from government is enshrined in EU law through the Framework Directive. However post-Brexit it is not clear what elements of EU communications law will remain UK law. It is entirely possible therefore that the government could seek to exert more direct influence over the direction Ofcom takes, whilst leaving Ofcom to decide how best to achieve the desired outcomes.

The Digital Economy Act 2017 included a provision for the Government to set out its strategic priorities that Ofcom is required to give regard to and Ofcom is required to respond as to how they intend to address those priorities. This is a useful step, though it is not clear how far Ofcom will be held to account should their actions fail to deliver against those priorities. Perhaps it could go further by setting targets that requires an Ofcom response where these are not met, such as the inflation rate set for the Bank of England. What is clear though is that the government cannot ignore telecoms regulation and its impact on investment if it wishes to achieve its objectives. Nor can it ignore the role of Ofcom in setting that regulatory framework.

Fibre deployment, whether to the premise or not, is recognised as an essential element in the deployment of 5G. The government has already done a considerable amount of work on 5G and how to support its future deployment and this is to be applauded. The government has recognised that the business case for 5G is still uncertain and although the technology has the potential to address a wide

range of use cases, it is not certain which of these will become the driver for widespread deployment, if indeed widespread deployment occurs.

However this uncertainty does mean that the government has to be alive to the possibility that 5G might not meet all expectations, especially in the time frame the government has in mind. It is worth noting that a number of commentators are beginning to question whether 5G will deliver all that is promised and even if it is necessary at all.<sup>2</sup> As such, it is important that government closely monitors developments and keeps an open mind on what is required to facilitate deployment.

The government's 5G strategy does a good job in covering the areas that need to be considered, such as how to deploy multiple small cells, but spectrum will remain a critical area. Again the role of Ofcom looms large in this area, although the government, through its power of direction, can have a greater role in spectrum management and regulation than is the case for fixed line technologies. The question is whether Ofcom's previous approach to spectrum allocation, based predominantly on auctions, is an appropriate method of allocation to support 5G. If 5G is to have multiple uses, so as supporting a range of vertical markets, then there will be more players, other than MNOs, interested in acquiring spectrum and the means of allocation will have to take into account their varying abilities to acquire that spectrum. An auction where a few of the largest bidders takes all may not lead to the desired outcome in an acceptable time frame.

The need for flexibility in spectrum allocation and management is therefore likely to become even more paramount in a 5G world and the government will need to work closely with Ofcom to ensure that outcome. Ofcom of course has a great deal of expertise in this area, but they will face challenges. Ofcom's communications on 5G spectrum suggest that they recognise that different approaches may need to be taken with regards to spectrum allocation, but it is important that they do so. The government has a direct and legitimate interest in spectrum allocation to enable the widespread deployment of 5G, in ways that support economic growth, enable the delivery of public policy and wider social policy. Ofcom will continue to have the lead role here, but government may wish to consider developing its own view of how spectrum might be best allocated, to inform future discussions with Ofcom.

There is another question that the government should be considering, namely how fibre and wireless technologies will complement one another. The government recognises the requirement for fibre as backhaul for 5G, but it is less obvious that it is considering whether wireless might be a better option for the final drop, avoiding some of the expense of deploying fibre over the last metres into the home. The call for evidence references 5G as a mobile technology and national coverage of fibre to the premise. Yet it is not clear that it is what is actually required. Initial evidence suggests that not everyone sees the need for very high speed connectivity at the gigabit level, or indeed anywhere near it. Despite the availability of fibre networks across the world, there are as yet no services or applications that have been developed that require gigabit speeds, or anywhere near them. Ofcom's own research shows high levels of satisfaction with broadband services (87% in Ofcom's 2016 Comparing Service Quality report) which suggests many would see no reason to pay more for an upgrade in speed. It is questionable as to what the added value would be in being able to download an HD film in 10 seconds as opposed to 30 for example.

Similarly business needs will also differ considerably. There are around 5m businesses in the UK, the vast majority are small and micro. Relatively few of these will require ultrafast connections for their business, although they will require reliable broadband connectivity. A Broadband Stakeholders Group report in 2015 on small business needs found that median downstream demand for small business premises will rise from 5Mbit/s in 2015 to 8.1Mbit/s in 2025 and demand for the 95th percentile will rise from 12.9 Mbit/s to 41.1 Mbit/s<sup>3</sup>. That can be delivered through existing technologies. Of course there will be thousands of SMEs in various sectors that require higher bandwidth, but the Government should be wary of a one size fits all approach as this will result in massively over engineered solutions for many users.

---

<sup>2</sup> See for example the 5G Myth by William Webb

<sup>3</sup>

<http://www.broadbanduk.org/2015/09/02/bsg-publishes-new-model-on-small-businesses-connectivity-requirements/>

I would add that connectivity in itself does not necessarily deliver significant productivity gains, at least not immediately. The real gains come from businesses adapting their processes to take advantage of what the connectivity can deliver and this will happen over a number of years. This has been demonstrated by a number of studies over the years, so any view that ultrafast connectivity will lead to improved large productivity increases in the short term may be too optimistic. This does not necessarily negate the need for investment, but many businesses may be slow to appreciate the benefits broadband can bring and be less willing to pay for the right level of connectivity.

A look at the UK market would support the view that not all consumers are interested in higher speeds. Despite the widespread availability of super fast broadband (over 90% availability) take up is around 44% according to Ofcom's 2017 Communications Market report<sup>4</sup>. Why demand is lagging supply is not clear, but it does raise questions about whether greater consideration should be given to a more nuanced approach as to what levels of connectivity will be demanded. An approach that considered a wireless drop to be a legitimate alternative to a fibre to the premise connection would significantly change the economics to such deployment. Equally the fact that copper is seen as redundant, despite the advances made in developing G.Fast technology, seems premature. FTTP only makes sense if you believe that the vast majority of the population want those speeds and are willing to pay for them, and this is very uncertain. If speed was the primary reason for consumers taking a broadband connection, then you would expect operators who offer the highest speeds to enjoy 100% market take up in those areas where they operate, but this clearly is not the case.

Of course demand could develop over time, but there is no sign of a killer app that would stimulate a spike in demand soon. That suggests that a more measured approach to investment can be legitimate. The government implicitly recognises that in suggesting a path to national coverage, however the timing of that coverage may differ between government and industry. Achieving a balance between wireless and fixed connectivity may help address any imbalance that exists.

My final general comment relates to the question of demand. The focus of this and indeed previous governments has tended to focus on the supply side. Yet demand clearly plays its part in determining whether or not industry invests. As noted, the level of demand for ultrafast services is unclear. This may be because people don't understand the possibilities open to them, are confused by what is on offer, or unwilling to pay the price as well as other reasons.

Government has in the past intervened directly on demand, most recently with offering financial support to business. Although effective, it can only be a limited approach given the financial implications.

The government's Local Fibre Networks programme is another approach based on aggregating demand around public sector requirements to encourage deployment. However assuming this is successful, it will again only take things so far. If the government wants to see national coverage of ultrafast broadband technologies, then it should be considering what more it might have in stimulating demand. Ideally of course industry itself should be in a position to do this, but there is probably a lack of trust in providers, driven by such things as the arguments on what constitutes a fibre network and the "up to" speed debate. Perhaps working closer with Ofcom, consumer groups and others to promote the benefits of broadband and to demystify the technology might be one approach. Alternatively something more substantial along the lines of the UK Online for Business campaign from the early 2000s could be considered.

## QUESTIONS

1 What is the existing UK telecoms market structure and policy framework able to deliver?

Based on announcements by BT, Virgin and the alt-nets (see INCAs Building Gigabit Britain report)<sup>5</sup> and the recent CityFibre/Vodafone announcement, the target of 10m premises connected to fibre in the next

---

<sup>4</sup> [https://www.ofcom.org.uk/\\_\\_data/assets/pdf\\_file/0017/105074/cmr-2017-uk.pdf](https://www.ofcom.org.uk/__data/assets/pdf_file/0017/105074/cmr-2017-uk.pdf)

<sup>5</sup> <https://www.inca.coop/policy/building-gigabit-britain-report>

decade should be delivered by the market. BT itself has consulted on achieving 10m connections over the next decade. The caveat is that announcements and actual deployments are two different things and the industry has not always delivered on its pronouncements. It is all too easy for companies to claim that changing conditions have required them to change their plans. The Government should therefore look to keep the pressure on companies to deliver what they have announced and call them to justify any rowing back from those announcements.

5G roll out is less clear. Although there has been much progress on agreed standards, the spectrum bands have still to be formally agreed, this will happen at the next WRC in 2019. It is likely that 5G deployment will be gradual, and at first concentrated on specific locations where there is high traffic or where it offers a more sensible solution to particular coverage/demand needs. The uncertainty over the business case will act as a drag, but even if there is a business case, the MNOs will be looking to recoup investment in 4G rather than invest significantly in 5G in the near term. Some deployment will happen (or 4G+ services will be marketed as 5G), possibly as early as 2020, if only to offer some protection to political pressure.

New players may act faster to introduce niche services, but access to the required spectrum may be an issue if Ofcom's auction design favours the existing holders of spectrum.

2 What barriers exist to long term investment in the UK telecoms market (beyond work underway by the Local Full Fibre Networks programme to stimulate demand, and by the Barrier Busting Taskforce to reduce build costs)?

Like any business, telcos investment decisions will be influenced by the general economic conditions. This will include access to finance, the confidence of consumers and whether they may be willing to pay for new services, the expected payback period and other conflicting investment priorities.

All governments strive to create benign economic conditions and/or create fiscal conditions (such as tax reductions or tax breaks) that encourage investment. This government is no exception. However the uncertainty around Brexit and what the impact will be when the UK actually leaves the EU, is clearly unsettling for business and will make investment decisions trickier. Consumer confidence is also uncertain and the willingness of consumers to maintain or increase their spend on telecom services is unclear. This would suggest that investment levels will, absent any specific government action, be cautious.

In telecoms there are additional factors in play. These include generating a return on current and recent investments (particularly in the mobile space, but also including investments in LLU in the fixed market) and the regulatory regime, which can have a real impact on the market. Investors are particularly wary of changes in the regulatory framework post investment, which can significantly change the return on investment.

These additional factors don't affect all players equally. So in fixed networks, the regulatory burden falls on BT (and KCom in Hull) as incumbents with significant market power. In mobile the operators tend to face the same regulatory burdens. However the "barrier" to investment in mobile tends to revolve around the allocation of spectrum, where it is almost automatic that one of more of the operators will consider themselves adversely affected by any spectrum allocation.

Regulatory uncertainty is unlikely to have a huge impact on the initial plans already outlined by telcos with regards to fibre deployment. If these are delivered, we are likely to see competing networks being deployed in urban areas (and to a lesser extent rural areas) so that levels of competition will reduce the need for regulation or remove it altogether.

National coverage however is a different matter. It is unclear what the government means by national coverage (90%+?), but realistically only one company, BT, going to be in a position to deliver on that scale. Other companies may be able to offer targeted deployments in certain locations, but the economics of deployment will mitigate against anyone committing to a national coverage, at least for the foreseeable future.

Realistically therefore only BT can deliver a national coverage, at least in any timeframe that the government is likely to find acceptable. But the case for BT to invest nationally may not be that attractive and as a company BT may consider G.Fast to offer a better investment prospect. BT may also believe that any regulated access to fibre networks it might build would make such investment less attractive. One approach therefore could be to offer a regulatory holiday or forbearance to certain investments. Ofcom has in the past been against any such approach, as they believe it undermines competition. But we have seen that no such competition has occurred in many less populated areas for super fast connections, so why should it occur for ultrafast? If the economics make infrastructure competition in certain areas unviable, then perhaps a rethink is necessary. It is certainly likely to be more attractive to investors if any investment in less profitable areas could capture 100% of the available revenue for a defined period.

In any event, Ofcom should be considering whether its approach is actually appropriate in all circumstances. The Communications Act which sets out Ofcom's duties states that:

It shall be the principal duty of OFCOM, in carrying out their functions—

- (a) to further the interests of citizens in relation to communications matters; and
- (b) to further the interests of consumers in relevant markets, *where appropriate by promoting competition*(my italics).

The phrase, where appropriate, surely indicates that Ofcom is not restricted to addressing the needs of citizens and consumers through competition alone. And yet that is how Ofcom has chosen to interpret its remit. It's approach has been to promote competition as far as it think is possible, but then it seems to believe that the responsibility to address the areas not provided through competition lies elsewhere, predominantly government. Ofcom needs to consider alternative approaches to its narrow interpretation, that could open up alternative regulatory approaches that could support further investment in areas where competition is unlikely to occur.

In wireless, access to spectrum will be a critical influencer on investment decisions. The upcoming auction of 3.4Ghz represents the latest tranche of spectrum to be released and is an identified band for deployment of 5G. Ofcom has made it clear that any licences issued through the auction process will not be exclusive which is to be welcomed. Greater attention will need to be made to the more flexible use of spectrum in the future, including forms of dynamic spectrum access, if we are to fully reap the benefit from this scarce resource and support the roll out of new services.

As noted above, one other area likely to remain a matter for discussion is whether the the current market structure of 4 MNOs will deliver the levels of investment required. The debate around consolidation of the market has been raging for sometime in the UK and beyond. Ofcom has been firm in its view that more competition is the way to encourage investment and so has opposed any further consolidation in the UK market. There have been recent consolidations in Europe, but it may be too early to conclude whether these have been beneficial to investment or not. Suffice it to say that this is an area that government should keep under review. Although any completion decisions are currently a matter for the CMA or Ofcom, given the essential nature of spectrum to mobile and fixed wireless connections, it is right that the government should have a considered view on this issue.

### 3 What can the UK learn from the widespread deployment of fibre networks in other countries?

Drawing conclusions from what other countries have done needs to be done with caution. Countries differ in terms of population and population density, the prevalence of flats or houses (which impact on the costs of deployment), geography, the historic evolution of the telecoms market and previous policy and regulatory approaches. Therefore simply transplanting an approach from one country to another might not work, if the wider environment of that country is not properly understood.

One general point that can be made is that in many countries fibre deployment has been facilitated by governments, local or national, to some extent. Examples include municipalities building local networks

(Sweden) to tax incentives and subsidised loans (South Korea). In countries like New Zealand and Australia government intervention has been extensive, with differing outcomes it has to be said. Although most countries have relied on the private sector to deliver, a number have earmarked public funds to support or provide investment in rural areas (Germany, Italy, France). Although the UK government has made funding available, it is likely that more will be required, or additional fiscal measures introduced, if true national coverage is to be delivered in a timeline that would be acceptable to government.

The approach to regulation has also played its part. Some countries have had a greater focus on passive (i.e infrastructure competition) remedies that perhaps has been the case in the UK. Ofcom's approach over the years has mixed passive and active remedies, although with a prevalence of the latter. The renewed interest in duct and pole access may mark a shift in that approach, although it is too early to say whether this will be effective and this approach be sustained. It might also be noted that regulatory changes often create their own problems, such as the challenges to Ofcoms dark fibre access proposals last year. On the face of it the proposals would have undermined infrastructure competition, which sends out a rather mixed message.

4a What different market models might work in the UK in the longer term and what risks and opportunities do they present?

There are already a number of different models in play in the UK, from the self help model, such as B4RN, through tie ups between infrastructure providers and ISPs (acting as anchor tenants), public sector bodies acting as anchor tenants, "on demand" provision by such companies as Hyperoptic etc. All can be considered to be successful, but in themselves seem unlikely to deliver the national coverage to which the Government aspires.

There may be market models, as suggested in the Call for Evidence, that would have some benefits, such as a longer payback period for telecoms infrastructure investment as is the case in investment in utilities. However this would require a shift in approach by investors and it is not immediately clear what might encourage such a shift, unless there was some way of guaranteeing a set return over a longer period. Otherwise the risks of regulatory change identified above will merely be increased.

Some have suggested that telecoms is a utility and might be regulated and managed as such. But this is to ignore the differences in the way that the telecoms market has evolved relative to say the gas and electricity markets. This includes the fact that there is infrastructure competition in telecoms, which doesn't exist in gas and electricity, and the fact that the mobile market has been built entirely with private money.

The real challenge is to try and anticipate how the structure of the market may change in the next 10-20 years. In particular the emergence of new players who will challenge the existing communication companies. We are already seeing the battle for the digital home being fought out between Apple, Google and Amazon. At present this is being fought over the devices people are using at home and on the person, but could easily spill over into the communications infrastructure. Google in particular has been active in the U.S. in deploying fibre networks and experimenting with high altitude platforms (balloons). This may just be a tactical move at present, but it does provide a hint of the disruptive potential these businesses could have.

Equally important is that these companies are extracting the greatest value out the digital market, mainly through their control of content. In the meantime existing comms providers continue to face the risk of saturated markets and stagnating, or falling revenues. This will continue the pressure for consolidation in the market, something the UK competition authorities have been reluctant to sanction. Existing operators therefore will need to be innovative in the packages and services they offer customers, acquire content where they can, such as sports rights or seek alliances that allow them to bundle content with the connectivity. These market challenges all have their impact on the ability to invest in future network deployments, even if the willingness is there. Such investment is likely to be tactical, addressing specific problems e.g. of capacity, rather than seeing a general roll-out, at least for the short to medium term.

In wireless there may be opportunities to further strengthen infrastructure sharing. Alternatively you could look at a model of wholesale provision of network infrastructure with retail competition, i.e. an equivalent to BT Openreach, although avoiding some of the issues there. However that would require spectrum being allocated to one company, which would be hugely unattractive to existing spectrum holders (as spectrum represents one of their biggest assets). Again it is difficult to see what would incentivise the market to move in that direction. Spectrum sharing is likely to offer additional opportunities.

The question implies that the Government sees a role for itself in some way in assisting the development of new market models through policy and regulatory decisions. I would expect though that the market itself will drive change and develop new models as far as it can within the regulatory framework with any Government role limited.

4b What should the Government consider when assessing the potential for migration from copper to full fibre networks?

This question was addressed in the Digital Communications Infrastructure Strategy. I would recommend a review of those answers to supplement any received this time around.

5 How should digital infrastructure be paid for?

Absent any specifics about what the Government believes is the right level of coverage for a national network and whether this will be FTTP entirely or a mix of fixed and wireless, it is difficult to be precise in answering this question.

However in my comments I think it is clear that both the private and public sector will need to invest if the Government's aspirations are to be met. This has proved to be the case in previous iterations of broadband roll out and unless there is some significant, indeed radical, change in the regulatory and/or market framework, it is hard to see why ultrafast roll out will be any different. Clearly if you change some of the variables you can push the cost "needle" more towards the private sector and away from the public sector, but some additional public sector spending would seem to be unavoidable.