Department
for Culture
Media & Sport

Extending Local
Full Fibre Networks

Call for Evidence

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Foreword

Cutting edge communications infrastructure is essential. We must plan now for the networks we will need to support continued economic growth and development across the UK - in urban and rural areas for companies of all sizes and people of all backgrounds. We must ensure the provision of the capability and capacity that consumers and businesses will increasingly rely on in the future. Improving the UK's infrastructure is a central part of the Government's Industrial Strategy.

Thanks to industry rollout, and Government initiatives such as the BDUK Superfast programme, broadband speeds of at least 24 Megabits per second (Mbps) are available to 91 per cent of homes and businesses in the UK – up from 45 per cent in 2010. Alongside private sector investment, we are on track to deliver superfast broadband access for 95 per cent of UK homes and businesses by the end of 2017. Current connectivity levels are good, and we are going further with the Government's commitment to a universal service obligation. We have also helped more than 40,000 small businesses access faster connections through a voucher scheme.

In order to move to the next level of ubiquitous high speeds and reliability it is clear that, whilst there a number of interim technologies giving connectivity at ever faster speeds, full fibre is the future. The market will be in the vanguard of delivering full fibre, but there is an important role for Government to support this, by ensuring the right incentives are in place and barriers to investment are removed.

I am therefore delighted that in his Autumn Statement 2016, the Chancellor announced the government's proposal for funding targeted at supporting market rollout of full fibre and 5G. This will bring faster and more reliable broadband for homes and businesses across the UK, and boost the next generation of mobile connectivity. It will be delivered in partnership with local areas, prioritising funding for new full fibre business connections.

This Call for Evidence sets out a number of approaches we can take to stimulate the market to extend full fibre networks in areas across the UK, including full fibre business vouchers, public sector data aggregation and supply side approaches. I hope you will engage with this Call for Evidence.

Rt. Hon. Matt Hancock MP, Minister of State for Digital and Culture

Context

As announced at Autumn Statement 2016, further public funding will be made available to complement existing budgets to stimulate the market deployment of full fibre networks in both urban and rural areas. The specific level of programme funding available will be outlined at Budget 2017 following this Call for Evidence.

Transitioning to full fibre networks

Widespread full fibre network connections will support a significant enhancement in fixed and mobile broadband quality. In the UK, this will broaden our focus on headline speeds towards digital connectivity that is not only faster, but also more reliable, resilient, secure and future-proof - the quality of experience that consumers will come to expect.

A full fibre connection is where the broadband line to a consumer or business premise is an unbroken optical fibre line from the exchange, consisting of one or more strands of fibre. This is commonly referred to as fibre to the premise (FTTP) or fibre to the home (FTTH). Full fibre broadband is capable of offering upwards of 1 gigabit per second download and upload speeds, and very high levels of service quality. Full fibre networks are also easier to maintain and have lower operational costs than alternative large scale, high speed networks. In determining how the proposed funding will be used, other technologies will be considered if they can meet these conditions.

As well as fixed line connectivity, the delivery of digital services across wireless networks is also vital for the UK. This includes evolving 4G mobile networks, fixed wireless broadband and Wi-Fi networks, and future 5G networks. Both wireless and fibre are critical components to support the evolving 4G networks, fixed wireless broadband, Wi-Fi and the services that will be enabled by the future 5G networks.

Supporting local area and market activity

Full fibre broadband deployment is already starting to increase in the UK. Our large network operators have announced plans to make more fibre available and there is also a growing number of alternative network operators seeking to make full fibre services available to people who are currently less well served by the larger networks. For example, CityFibre are delivering a series of projects in forty cities across the UK, providing gigabit-level services to public and private sector customers.[1] Broadband Delivery UK is subsidising suppliers to build part and full fibre networks in rural areas, and has stimulated demand for them in urban areas. However, while overall connectivity in the UK is high, full fibre coverage is still significantly behind

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[1] https://www.cityfibre.com/gigabit-cities/

that of some international competitors both in terms of the current position and expected future deployment, and we need to stimulate the market to do more in both urban and rural areas.

Communications network operators are starting to partner with local authorities to deliver fibre networks at the local level, increasing the availability of full fibre connections, and we want to build on this to extend coverage further. This Call for Evidence considers a range of potential approaches, and seeks views on their effectiveness and viability.

Complementary Government and regulatory action

The Autumn Statement 2016 also announced:

- Public funding for the creation of a Digital Infrastructure Investment Fund, matched by the private sector, to improve access to commercial finance for companies who want to invest in new fibre networks.
- Reliefs on Business Rates from 2017 for the deployment of new fibre.
- Public funding for a strategic programme of fibre and 5G trials to bring forward technological advancements in 5G networks and applications, and to encourage the further deployment of full fibre networks. Further information about how local areas could access this funding will be set out in due course, with confirmation of the total programme allocation at Budget 2017.

The Government is reforming the Electronic Communications Code and has provided for easier access to existing infrastructure to reduce the costs of new fibre deployment. Also, clause 7 of the Digital Economy Bill enables the planning relaxations introduced in 2013 for broadband cabinets, poles and overhead lines to be made permanent through subsequent changes to secondary legislation.

Further to this, Ofcom's Strategic Review of Digital Communications[2] describes a major strategic shift to encourage the deployment of new full fibre networks to homes and businesses, as an alternative to BT's planned innovation in copper-based technologies. Ofcom is making progress in requiring BT to open up its network further, allowing easier access for rivals to lay their own fibre cables using BT's telegraph poles and in its underground cable ducts. For example, Ofcom is intending to require BT to share information on asset location and capacity, improve the effectiveness of operational processes and remove restrictions to its use. Ofcom is also requiring BT to provide access to its dark (i.e. unlit) strands of fibre in its network for other providers of high speed leased lines for businesses.

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[2] https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/ policy/digital-comms-review/conclusions-strategic-review-digital-Communications

Furthermore, Ofcom is currently conducting a consultation on proposed changes to Openreach's Physical Infrastructure Access product[3].

Local bodies - including local authorities, Devolved Administrations and Local Enterprise Partnerships - benefit from the economic development opportunities that high quality and widespread broadband services can enable. Local bodies are already taking a role in expanding the availability of fibre and usage of these networks. Supported by Broadband Delivery UK (BDUK), they are running projects investing £1.7bn of public funding into providing superfast coverage and extending fibre networks, as well as delivering full fibre connectivity to some rural premises. Separately, fifty cities administered the distribution of over 40,000 business connection vouchers to local SMEs. Local bodies' economic development teams are working closer with planning teams to facilitate operators' delivery plans.

Improving Business Connectivity

The role that businesses play in driving local employment and growth cannot be understated. Ensuring the availability of full fibre connectivity to businesses - where it is required - will play a critical role in the attraction, growth and retention of businesses to a local area. Businesses increasingly need fast and reliable connections, able to handle high volumes of traffic. In order to better shape policy solutions to address their current and future needs, the Government conducted a review of Business Broadband.

A Call for Evidence was held in May and June this year, which sought inputs from industry about the broadband speeds that businesses need now and in the future; the barriers that exist for businesses to get the affordable, high speed broadband they need; and the role that leased lines play in the market. Responses identified the need for reliable, symmetrical upload and download services, a lack of understanding amongst some businesses about what businesses grade connectivity looks like along with its benefits, and a lack of infrastructure in certain areas as the main issues. It was also noted that market developments and regulatory actions are already being taken to improve business connectivity.

We intend to publish the findings of the Review separately. This will be complimentary to further analysis we will undertake in this Call for Evidence, as well as any subsequent actions.

Additionally, Ofcom have:

- Put forward strict new rules, from 1 May 2016, to improve BT's performance in installing high-speed business leased lines and significantly reduce the wholesale prices BT charges for these lines.

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[3] https://www.ofcom.org.uk/__data/assets/pdf_file/0024/95109/
Wholesale-Local-Access-Market-Review.pdf

- Published their Advice for Business website[4], which provides help and advice for making use of landline, mobile, internet and postal services, and guidance on what to do if things go wrong.
- Introduced a new voluntary Business Broadband Speeds Code of Practice that will give businesses clearer, more accurate and transparent information on broadband speeds before they sign up to a contract. Signatories also commit to manage any problems that businesses have with broadband speeds effectively, and allow customers to exit the contract at any point if speeds fall below a minimum guaranteed level. The code of practice came into force on 30 September 2016 with 7 business ISPs currently signed up to the code - BT Business, Daisy Communications, KCOM, TalkTalk Business, Virgin Media, XLN, and Zen Internet.
- Announced intentions to introduce tougher minimum standards for Openreach with fines for underperformance; provide consumers with clear and comparable information on how companies perform on service quality; and automatic compensation for consumers and small businesses when things go wrong.

Call for Evidence

Through this Call for Evidence we are seeking to understand how, through the use of public funding, the Government could take further action to encourage greater and faster deployment and extension of network infrastructure that will deliver full fibre connections to business and residential premises and, in time, support the rollout of 5G mobile services across the UK.

We are seeking evidence from a range of stakeholders in three key areas:

- Section 1: Existing activity and approaches
- Section 2: Consideration of different approaches
- Section 3: Opportunities to improve Government's approach

This Call for Evidence is primarily aimed at the electronic communications industry (network operators and internet service providers), local bodies, organisations representing business and residential consumers, as well as representative organisations.

The geographical scope of this Call for Evidence is the UK. As some aspects of the paper may touch on policy areas that are devolved, the UK Government will work closely with the Devolved Administrations.

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[4] http://consumers.ofcom.org.uk/ofcom-for-business-consumers/

Section 1: Existing activity and approaches

This section seeks information on the range of approaches that are already being used or planned across the UK and further afield.

Local activity

We want to know more about local approaches that have been taken to the deployment of full fibre networks, and subsequent lessons learned at a local level in both urban and rural areas. In particular, we are interested in gathering evidence on further examples of locally driven activity - both in the UK and internationally - either recent or planned. We want to see evidence of the impacts of this activity, including whether it has delivered intended outcomes and whether it has resulted in greater availability or take-up of full fibre networks, for existing and new build housing and business premises.

Market activity

We know that suppliers have been actively supporting local fibre roll out in the UK. Communications network operators such as Gigaclear, CityFibre and Hyperoptic seek to engage with local authorities on their full fibre build plans and profile levels of demand before beginning network rollout in an area. Meanwhile, Virgin Media encourages aggregation of demand through its CableMyStreet website[5], and BT actively engages with communities to seek new solutions to extend full and part fibre coverage in hard to reach areas.

We are also interested in other examples of projects that specific suppliers have undertaken or have planned which will result in the increased availability of full fibre networks. These could include UK and international examples of the deployment of infrastructure capable of supporting full fibre connectivity, or which have stimulated additional investment in such infrastructure. We are interested in examples of where deployment of infrastructure for full fibre connectivity for new build has been coordinated with improvements in connectivity and services for existing premises. These could identify particular factors, for example, those that have helped trigger additional investment in networks as well as lessons learned.

Question 1:
What local approaches have been taken to date or are planned - either in the UK or internationally - to stimulate the market delivery of full fibre networks, in both urban and rural areas, and what results have they achieved? Where appropriate please provide evidence and any other additional information.

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[5] http://www.virginmedia.com/cablemystreet/

Section 2: Consideration of different approaches

Across the UK, the public and private sectors have used a range of approaches that support the deployment of infrastructure through either direct subsidy or demand stimulation. Past approaches have either yielded positive results or otherwise useful lessons in the delivery of high-speed and high-quality connectivity. This section describes potential approaches and seeks evidence from respondents as to the effectiveness of different approaches in extending full fibre networks and their limitations.

In particular, the Government would like to explore taking further local approaches to public sector demand aggregation, where local bodies use public sector buildings as "anchor" customers in a way that enables the market to extend coverage into surrounding local areas.

Demand side approaches

A. Public sector demand aggregation

The public sector is a major purchaser of Internet connectivity. Locally, this encompasses network connections to council offices, libraries, schools, and other buildings from which local services are delivered. It also covers connections to NHS premises and GP surgeries and other public sector locations, such as police authorities and Government-owned premises.

Typically the public sector purchases network connections either directly from the network operators (e.g. through the Public Services Network (PSN)) or through IT service providers. There is currently a degree of aggregation of public sector demand focussed on achieving economies of scale for network connections for public sector use. For example, local authorities purchase services covering multiple premises through Government frameworks.

However, beyond reducing costs through economies of scale, public sector aggregation may be able to support the deployment of local fibre networks through acting as an anchor customer. Aggregated public sector demand may be sufficient to build a commercial case for a network operator to invest in deploying a local fibre network. Knowing that the aggregated public sector demand provides a guaranteed set of revenues, the operator can then consider the commercial case to build a local fibre network and potentially seek additional revenues from it by connecting nearby businesses and premises.

Examples of this type of aggregation include:

- In 2013, Peterborough City Council agreed a strategic partnership with CityFibre, for which they created a local fibre network. The network initially connected 107 public sites, and in 2016 an additional 220 sites

were agreed. CityFibre has deployed over 90 kilometres of fibre infrastructure, which has been made available on a wholesale basis to provide full fibre services to businesses.

- NYnet, a private company wholly owned by North Yorkshire County Council, provides a local fibre network across North Yorkshire and provides connections to a range of public sector sites and service providers. Investment in this approach was facilitated by their ability to make cost effective connectivity to public sector sites available.

Although there are previous examples of the aggregation of public sector demand past, we believe that there is new potential for this approach on the basis that there is now a more competitive market for full fibre investments and a greater demand for higher speed broadband services. There is currently no coordinated encouragement of local bodies to consider aggregating public sector demand. We want to consider how best to encourage and coordinate public sector bodies to work together to aggregate demand, whether in terms of the total value of services procured, or in terms of the duration of any contractual commitment for them, and how additional public funding could support investment.

B. Voucher schemes for private sector demand aggregation.

Voucher schemes have successfully been used to support demand for superfast broadband roll out. The current Better Broadband scheme allows any premise with connection speed under 2Mbps to get a connection, especially in rural areas. In 2014/15 the business Connection Voucher Scheme helped more than 40,000 SMEs access Superfast Broadband.

The scheme gave grants of up to £3,000 directly to the SMEs, avoiding centralised procurements, and enabled them to choose the solution and supplier that worked best for them. It removed a key barrier to connectivity access for small businesses by covering upfront costs and, as these are typically amortised over the life of the contract, reduced ongoing fees. Delivered by city councils across the UK, this scheme helped stimulate demand for better connectivity and encouraged choice and competition amongst providers. For example, in London the Perseverance Works - a cluster of creative businesses - aggregated connection vouchers from its eligible SME tenants to fund the build of new infrastructure.

The Government would like to know what interest there might be from stakeholders in a new business broadband connection scheme, potentially focused directly on new full fibre connections. We are considering a new full fibre connection voucher, to help connect businesses where it is uneconomic for network operators to connect individual business premises. Typically, much business connectivity is delivered through fibre broadband constructed on a bespoke basis for individual businesses. One approach could be for local businesses to work together to commit or signal an intention to act as anchor customers to support a network operator's own commercial case for more

widespread local fibre rollout, where the local network operator can then target the local business community.

The aggregation of business demand in particular, alongside approaches to aggregating public sector demand, could together provide sufficient potential demand to stimulate deployment in local fibre networks that would otherwise not take place in the near future. It could also provide scope for local fibre network operators to rollout to residential premises in the local vicinity.

Local bodies could also consider how they could help in the coordination of local business demand, as well as any co-ordination led by local businesses themselves.

<u>Supply side approaches</u>

Aside from stimulating demand, the Government also could look to develop supply-side interventions to help deliver full fibre. Here we consider a number of possible approaches.

C. Making public sector assets available

Government has sought to facilitate the expansion of new networks in some instances by making available assets it owns for this purpose:

- Local authorities have offered concessions for use of their duct networks: for example Colchester Borough Council recently selected County Broadband to run a fibre network using its upgraded CCTV system, having identified a substantial number of underserved SMEs as potential customers along the route.
- Local authorities, including Aberdeen City Council, have made street furniture, such as lampposts, available for suppliers to install equipment for the provision of high-speed, high-quality wireless connectivity on a concession basis.
- BDUK, Network Rail, Quickline and Cybermoor are conducting a technical trial using Network Rail's fibre network and the Janet education network to prove the technical and operational capability required to provide backhaul to a full fibre network in the South-Tyne Valley.

On the other hand it is recognised that there may be limitations in such approaches: public sector assets may be not be located in suitable locations, there may be cost and operational considerations in converting them for such use - particularly in specialised environments, e.g. rail, schools, and the public sector must be careful to avoid inadvertent use of State aid. Nonetheless, we are keen to maximise the potential of public sector infrastructure.

D. Access to location data on infrastructure assets

The ready availability of location information for existing infrastructure assets is important when considering new network investment. This applies to network operators when considering how best to interconnect new build housing and business premises with existing networks, as well as making use of the Communications (Access to Infrastructure) Regulations 2016 to access infrastructure from any utility operator. For local authorities and developers, this is key to understanding the costs and accessibility of communications and utility services for new build housing and business premises.

One approach is to consider how a single source could be made available which provides access to such information. For example, this could comprise a GIS (Geographic Information System) location-based database that could be accessible by local authorities, and also by other parties on a commercial basis. This could potentially include information that Ofcom expect to require Openreach to provide on the physical location and characteristics of its ducts and poles.

E. Directly funding fibre routes in uneconomic areas

The approaches set out above could support efficient fibre rollout to extend coverage in local areas. However, in some local areas the only way to ensure wide-scale fibre rollout would be to complement other approaches with direct investment in fibre routes. BDUK and its local authority and Devolved Administration partners are already taking this kind of approach and investing in open access fibre infrastructure to make superfast broadband available where there is a market failure.

Through the superfast model, local partners have the ability to co-fund a supplier to make backhaul services available to a new location (sometimes characterised as a "digital village pump"), although this is so far untested in the marketplace.

F. Potential pilots

We recognise that there are other approaches that could be effective, but for which proposals are not sufficiently developed at this stage. For example, replacing all existing copper connections to premises with full fibre connections, with customers migrating to services on new full fibre networks in an area, would effectively aggregate all of the existing demand from the existing operator. This would improve the commercial case for full fibre deployment. Nevertheless, the consequences for consumers and businesses would be significant and pilot projects may be a suitable next step to investigate the impacts on customers relative to the impact on the economics of fibre deployment. This would require agreement from the existing operator for an intention to pilot the switch off of the copper network in an area. This

call for evidence therefore focuses on the case for pilots rather than for full copper switch off on a national basis.

Question 2:
What evidence is there to demonstrate the effectiveness and potential of approaches A to F above, specifically in the context of stimulating the rollout of local full fibre networks in urban and rural areas?

Section 3: Opportunities to improve local approaches

This section seeks views on where Government could usefully deploy funding in support of full fibre broadband rollout.

Towards an integrated approach

Over several years a variety of programmes - such as superfast rollout, public sector networks or the connection voucher scheme - have each focused on solving particular issues. The Government is now asking how we can improve on existing approaches, and work with local bodies to integrate them in creating an overall environment and model delivery that is more effective, and efficient, in stimulating the market to deliver full fibre rollout.

This could mean coordinating a set of actions involving both demand and supply side approaches to encourage greater investment and market place competition which builds upon existing market and local activities and government and regulatory initiatives.

The Government's expectation is that through effective use of demand aggregation and stimulation approaches, levels of public subsidy can be minimised. As well as developing our understanding of regulatory barriers to investment, this would help ensure that the limited public funding available can go as far as possible to increase full fibre network coverage across the UK.

Question 3:
What is the most effective and efficient delivery model Government can use to stimulate future delivery of full fibre networks across the UK in both urban and rural areas, building on and integrating approaches that have been taken to date?

We also need to explore understanding of regulatory barriers to deployment, which the Government could look to tackle in order to help develop the best possible environment for investment.

Question 4:
What other changes, locally and/or nationally, are needed to reduce the cost of full fibre rollout, such as opening access to publicly and privately owned facilities, or changes to wayleaves, streetworks and other areas? What evidence is there to demonstrate the effectiveness of such changes?

How To Respond

Responses to this Call for Evidence must be submitted by Tuesday 31 January 2017.

Please send your response to fibrenetworkscall@culture.gov.uk. Responses or material sent to any other email addresses will not be taken into consideration.

If you cannot reply via email, please respond by post to:

> Extending Local Full Fibre Networks Call for Evidence
> Digital Economy Unit
> Department for Culture, Media & Sport
> 100 Parliament Street, London
> SW1A 2BQ

When responding, please state whether you are responding as an individual or as a member of an organisation. If the latter, please state the organisation on whose behalf you are responding. If responding on behalf of a larger organisation, please make it clear what the organisation represents and, where applicable, how the views of members were assembled.

This call for evidence is intended to be an entirely written exercise. It is available in text format on the Department's website: www.culture.gov.uk. Please contact the Digital Economy Unit on 020 7211 6000 if you require any other format, e.g. braille, large font or audio.

Information provided in response to this call for evidence, including personal information, may be published or disclosed in accordance with the access to information regimes (primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 and the Environmental Information Regulations 2004). If you want the information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence. In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.

The Department will process the information you have provided in accordance with the Data Protection Act, and in the majority of cases, this will mean that your personal information will not be disclosed to third parties.