

Enabling the market to deliver superfast broadband in the UK

The need

Quick summary

There is an urgent need for the UK to develop a ubiquitous superfast broadband network to ensure the continuing competitiveness of our economy.

However the problem is not primarily the costs of building it, but the way the existing UK broadband market is set up. While serving us well in the past, it is now acting to slow down the development of new broadband services. It will continue to do so, even should this infrastructure be paid for.

This is because the market has been set up on the basis of the consumer paying a fixed fee for broadband, irrespective of how much data intensive services they use online. Data intensive services accessed by the consumer over their broadband connections are therefore a cost to the Communications Providers. At the moment, there is no effective way for these extra costs to be paid for, either by the consumer or by the service provider.

As a result Communications Providers have a real disincentive to encourage their customers to use any new data heavy service accessed via the Internet. If this issue is not dealt with, even should the capital costs of rolling out a superfast broadband network somehow be provided, innovation and the development of new business opportunities and new services to benefit the customer would be hindered.

The urgent issue is to work with all stakeholders to identify a different market structure that would ensure that all key players are incentivised to support the development and growth of the new services that would be enabled by the higher speeds and higher quality of superfast broadband.

A very effective role for Government would be to support a city or sub region to bring all the key stakeholders together to develop a market structure that would work for all of them and to test out its practicality. This is because many of the new services that could be offered over superfast broadband are locally focused and because a city or sub region could fairly quickly develop a superfast broadband network that would be large enough to be viable.

It is clear that the UK needs to catch up with much of the rest of the world and build a superfast fibre-optic broadband network to ensure our economy remains competitive.

The main obstacle is **not** the cost of installing this new infrastructure. Investment would not be a problem, were there to be a clear and robust business case. The problem is market failure.

The Interim Digital Britain report makes it clear that *'We need to plan now, identify the market failures that are standing in the way of a full roll out of digital infrastructure in the UK, and act swiftly in Government to help the market in the timely delivery of the high-capability infrastructure we will need'*. (Page 4 paragraph 4.)

I would suggest that there are two key problems in relation to the market:

- **The first is that the market for superfast broadband services in the UK does not yet exist.** There are no services being delivered at the moment in the UK over superfast broadband and so there is no firm data as to what UK customers are prepared to pay and what sort of uptake there would be. (While there is a great deal of data about the take up, costs and revenues from superfast broadband in other countries, results from elsewhere cannot be simply read across into the UK situation as market structures differ. So, while sensible estimates can be made, uncertainties will remain until the first real market testing occurs in the UK)

This uncertainty means that telecoms providers are understandably reluctant to invest the considerable amount of money needed to build a new fibre optic network.

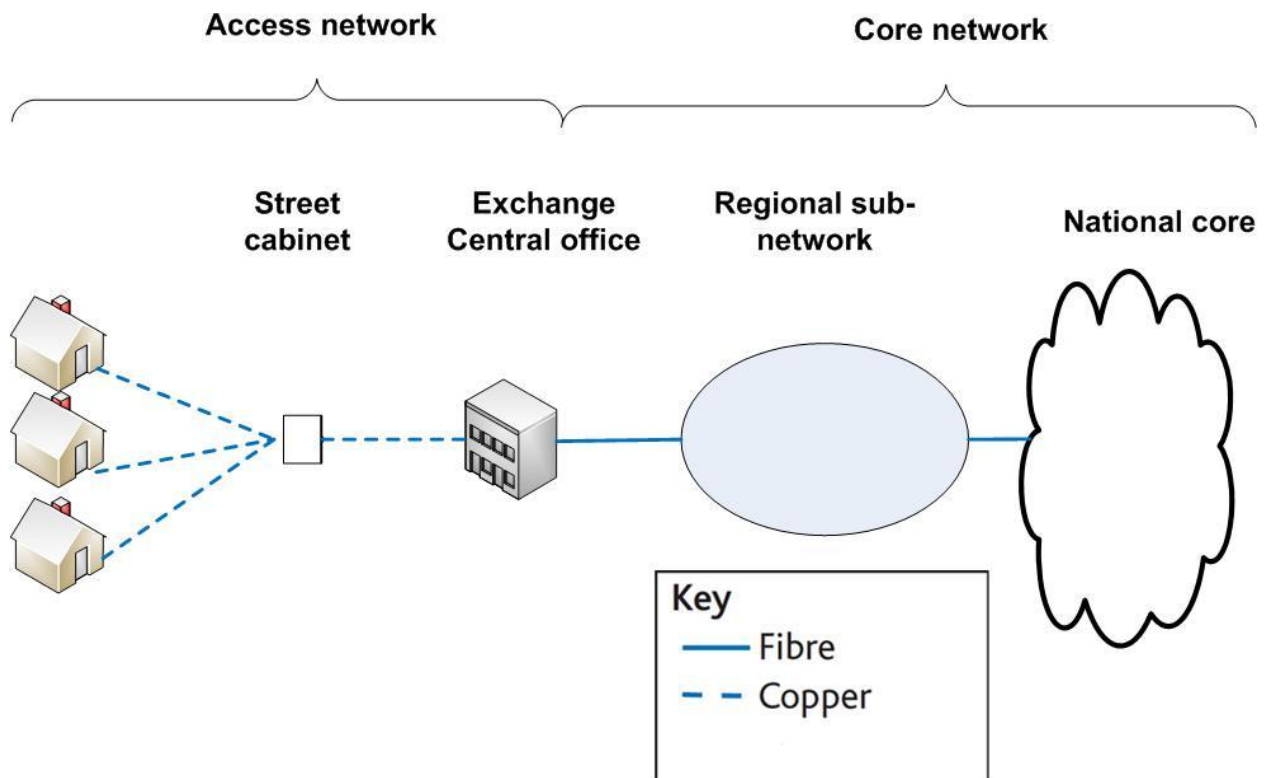
- **Even more important is the fact that the existing broadband market structure acts as a real disincentive for innovation and investment.** It was put together in the days of dial-up internet access to allow competition in the provision of services over BT's infrastructure. The market that worked well then is already showing strain and will not be fit for purpose to deliver superfast broadband.

If these two problems were solved, then it would be far easier to attract the investment needed to deliver a 21st century infrastructure in the UK.

It is worth looking at the second of these two issues in more detail.

How we get broadband today

Our telephone conversations and data traffic are carried over a dedicated copper wire that links directly between our home and the telephone exchange. At the exchange, the data and voice traffic from all the homes and business linked to that exchange are brought together and sent over fibre to the national and international telephone networks and to the Internet.



The network that delivers broadband to us today over the copper telephone lines can therefore be split into two; the access network from our homes to the telephone exchange (usually via a street cabinet) and the core network which links the telephone exchange to the national network and via that to the Internet.

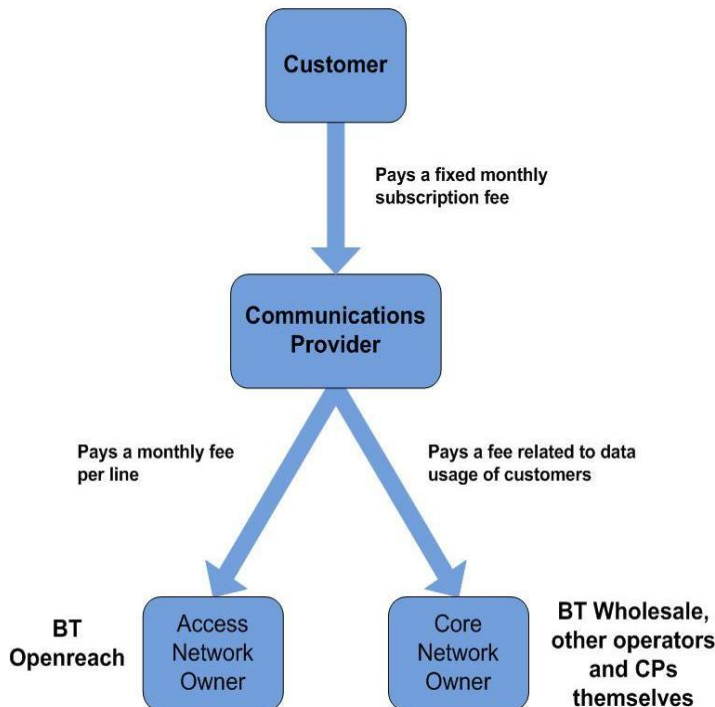
BT owns the copper wire from the exchange to our home, in other words the access network. Since January 2006, this part of the network has been separated out from the core network and is managed by a separate company within BT known as BT Openreach. BT also, of course, owns a fibre network that links from each exchange via the regional sub-network and the national core network to the internet and this part of the network is managed by BT Wholesale.

However, other operators are able to put their own fibre to the BT exchange as well, to link in with their own regional and national networks.

The existing market

The existing market was designed to bring competition into the provision of internet access over BT's infrastructure.

In order to do this, the provision of infrastructure was separated from the provision of internet access, similar to the way that the market for other utilities, such as gas, water and electricity, has been structured in the UK.



As we have seen, BT Openreach provides and manages the network from the exchange to the home. Broadband services to the home are provided by Communications Providers¹ such as BT Retail, BSkyB, Tiscali and Carphone Warehouse. These pay a monthly fee to BT Openreach for renting the connection from the exchange to the customer.

The core network and link to the Internet is usually provided at least partly by BT Wholesale, but might also be provided partly or completely by another operator or via the Communications Provider's own network.

The Communications Providers pay the owners of the core network a fee for the amount of data traffic to and from the Internet generated by their customers. Even if the link to the Internet is via the Communications Provider's own network, they will have a cost related to the amount of data traffic carried.

This market structure has worked well until recently – we have some of the lowest prices and highest take up rates in the world. However, this market is already beginning to show cracks and will be no longer fit for purpose for the delivery of superfast broadband.

The key flaw in the market for broadband

The problem is that the way the market has developed in broadband has one very significant difference from the way it has developed in other utilities.

For broadband, in general terms, the Communications Providers provide an unmetered service. The consumer pays a fixed monthly fee for internet access and expects to get as much data traffic as they want within that fee.

This is unlike the market in electricity and other utilities, where the consumer pays according to how much they use. Like the broadband market, the electricity market consists of an infrastructure company and a number of service providers that each compete to provide electricity services to the public. However, this market supports huge numbers of businesses that benefit from the electricity supply – white goods manufacturers, TV and entertainment services, security services, the list is endless. Because our usage is metered, the more energy we consume the more we pay the supplier. The result is that the more services that run over the electricity supply, the greater the profit for the electricity suppliers.

The situation is reversed when it comes to broadband. The consumer does not pay for the amount of data they use, but merely a fixed fee to access the internet. However, the more data the consumer uses, the greater the cost to the Communications Provider. Greater data use by the customer is therefore a direct cost to the Communication Provider.

¹ Communications Providers (CPs) are companies which provide services, such as telephone and internet services, to a customer's home and which usually own some infrastructure.

Because of this, there is a strong disincentive for Communications Providers to do anything that will encourage their customer to use any data-heavy service.

Virgin Media

The one exception to the market structure as described here is the provision of broadband over Virgin Media's cable network.

This follows a very simple model. Virgin Media owns the network and delivers the services over it. No other company can use that network for delivering its services. The customer pays Virgin Media for the services and Virgin Media provides them.

Virgin Media is only able to follow this model within the UK because all cable subscribers live in areas where they could also choose to get their internet over the telephone lines. The prices and Quality of Service of Virgin Media's offering are therefore kept under pressure from the competitive market in broadband over BT Openreach's telephone lines.

The signs of strain

The reason the market developed in this way was that originally the internet was used for email and for accessing simple websites, with the result that the volume of data transfer was fairly low. The consumer was purely paying for accessing the Internet and the cost of data transfer was low enough to be easily managed by the Communication Provider within the fixed monthly subscription fee.

However the internet has changed.

The market is now showing signs of strain because of the large number of so-called 'over-the-top'² services, which are provided over the internet to the resident. These include Internet telephony such as Skype, music downloads such as iTunes, peer to peer services and video such as YouTube or the BBC iPlayer.

One issue is that some of these, such as internet telephony, may compete with services provided by the Communications Provider.

More importantly, many of them generate significant data traffic over the broadband connection, which then needs to be paid for by the Communications Provider.

The problem is that there is no mechanism for the Communications Providers to charge appropriate fees for carrying that content to the end customer.

The issue has particularly surfaced with the growing consumption of online video content, which is only likely to accelerate. There have been calls by some Communications Providers for the BBC to pay for the delivery of its content over their networks via the BBC iPlayer, but it is not easy to see how this would work within the present market structure, especially as the BBC is only one of an ever growing number of companies providing video content over the Internet and this market is an international one, with many providers based outside the UK.

The impact on the roll out of superfast broadband

As we have seen, because of the way the broadband market in the UK has been structured, there is a built-in reluctance on the part of the Communications Providers to encourage their customers to move to faster broadband and therefore increase their data use.

Their only reason for doing so would be as a defensive measure, to protect market share against their competitors. So they are moving as slowly as possible, which makes it difficult for the infrastructure providers, in particular BT Openreach, to justify investment in superfast broadband.

² 'Over the top' is a digital industry term describing third party home entertainment services that are delivered across (i.e., "on top" of) a broadband network without affiliation with the broadband service provider.

Imagine how different it would be if their revenue depended on data usage – they would be looking actively at every method of encouraging greater data use and would be keen to encourage investment in upgrading the broadband access infrastructure.

The difficulty

The difficulty is that the idea that Internet connectivity comes for a fixed monthly fee has become firmly entrenched in the minds of the consumer and it will be very difficult to change this.

So some other way has to be found to incentivise the key players to promote and invest in superfast broadband.

Clearly a fresh and comprehensive look at the way the market is structured is needed to identify how best to allow all players to gain sufficient benefit from the roll out of superfast broadband to focus their efforts on making it work and to ensure that innovation and fairness are properly supported.

The new realities

The broadband market in the UK was structured to allow the consumer to choose between different providers of a single product – broadband – over an infrastructure owned by a single provider – BT.

However superfast broadband will require a market structured to allow for:

- Many new products and services
- Delivered by many new service providers
- Paid for both by consumers and by public sector bodies such as social care agencies and educational institutions
- Over an infrastructure with a diverse ownership

The existing market structure just will not do. The focus of attention needs to be on building a market structure that will meet the needs of this very different situation.

The challenge of superfast broadband to the existing market structure

With the development of fibre to the home, the existing market structure will come under increasing strain. The business case and the value of a superfast broadband infrastructure is based on the large number of new applications and new services that it would enable, many of which would come from new players. These would include, for instance, neighbourhood TV channels, high bandwidth government services, telecare and telehealth, smart metering, security, neighbourhood CCTV, and neighbourhood wireless broadband and telephony services. These services would become possible, not just because of the higher speed, but also the greater Quality of Service and reliability that fibre networks provide.

It is difficult to see how the extra value provided by these new service providers could easily flow into the market as it is presently structured. What started out as a market structure supporting the simple provision of internet access, now needs to support a vast range of services, provided by many different providers.

Of course, these services could be simply offered over the Internet, with no payment being made to either the Infrastructure provider or the Communications Provider concerned. However, this would position these new services as threats to the existing players and undermine the business case for them to invest in superfast broadband.

In order for the infrastructure providers and Communication Providers to have the incentive to roll out superfast broadband quickly, new ways need to be found for these new service providers to pay a fair rate for the benefits of being able to use the higher-speed, more reliable network

An additional complexity comes from the fact that there is also likely to be a range of new infrastructure owners. It is accepted, for instance, that there will be many local fibre to the home initiatives based on new build estates, local business initiatives, or local user co-operatives. The i3 Group is busy installing a dark fibre infrastructure to the home in Bournemouth and in Dundee and is looking to roll this out to other

towns and cities in the UK. It is also likely that ducting will begin to be laid speculatively in all new streetworks and it is not yet clear who would own and manage this.

In order to ensure that all of these new service providers and infrastructure owners can play an effective role in the delivery of superfast broadband, the existing broadband market needs to be significantly restructured.

Getting the content providers to pay

Ofcom deals with this issue in its report 'Delivering superfast broadband in the UK' published in September 2008. In sections 9.23 – 9.25, it reviews favourably the idea of the adoption of a carriage fee-based model, whereby content producers are charged for the distribution of their content to end consumers. The suggestion is that network providers would offer quality of service guarantees to content producers in return for a carriage fee. Such a contractual relationship could include content protection, download speed guarantees or customer service commitments.

It mentions a number of obvious issues with this. There is the difficulty it raises with respect to net neutrality, in that it could result in Communications Providers discriminating against those content providers who do not pay a carriage fee, something which many people strongly oppose, particularly in the US. It could also hinder innovation by providing additional costs for new service providers in delivering their services to customers. However, overall the suggestion is supported and Ofcom's position on this is endorsed in the Interim Digital Britain report.

The problem is that this is a complex issue and difficult to resolve. The Communications Providers would need to act together on this to ensure a consistent approach. A fair method of charging would also be needed which would take into account not simply the amount of data traffic generated, but also the value to the customer. There would also need to be a way of allowing new services to be trialled easily, without the need of a heavy upfront financial payment. Any methodology adopted would also need to reflect the differing economics between major national or international providers and small local businesses or local public sector services providers such as schools and doctors surgeries.

Building a viable market structure for superfast broadband

To put together a clear investment case, the market for superfast broadband will need to make it easy to include new players and new applications, so that sufficient new revenue streams can be generated to justify the extra costs of this new infrastructure. This market will need to be stitched together in a way that will allow service providers, infrastructure owners and all the other players to receive sufficient revenues to ensure their long term commitment.

Rather than trying to manage this on a national scale, it would make much more sense to focus on using one or more cities or sub regions to build and demonstrate a viable market structure. These would have sufficient scale to keep costs low, but would be small enough to make it easy for all the key players to be able to work together. Given the right framework, existing and new players could work together to build this new market by:

- Building demand through local marketing and other locally focused initiatives, for instance, working with local employers to identify applications enabled by superfast broadband that would support their staff in working from home and with social landlords to find services delivered over superfast broadband that would support their relationship with their tenants. This will allow momentum to build up, where people who have superfast broadband will talk about it with their neighbours and work colleagues, so that it becomes considered the norm.
- Developing the supply side by supporting key local stakeholders in developing and offering new and valuable services. Public bodies such as schools, GPs, hospitals and Registered Social Landlords could exploit the infrastructure to deliver new and better services more cheaply. Businesses could identify opportunities to provide new services or to enhance existing ones.
- Lowering the costs of the infrastructure, by ensuring that all opportunities provided by streetworks and new housing and commercial developments are used to install ducting or fibre.

- Constructing the market together in such a way that all the key players gain sufficient revenues or other benefits to ensure that they will continue to play their part on an ever increasing scale

Farmers markets – a model of how to do it

A good model is that of farmers' markets. Farmers have products they want to sell and many people would prefer to buy their fresh foodstuffs directly from the producer.

However, for this to work a local trusted third party needs to:

- co-ordinate the suppliers to get sufficient numbers of them involved to make the market viable
- organise the 'infrastructure providers' to ensure that there is an appropriate venue, along with stalls, electricity and cleaning up services afterwards
- Ensure that the costs for the provision of 'infrastructure' are fair and charged appropriately to those providing services to allow them to make sufficient profits
- Co-ordinate the marketing to local people.

It is a low-cost, light-touch task, but essential to making the market viable.

In order to deliver superfast broadband, what is needed is for a trusted third party to bring together the right organisations and agencies and work with them to ensure that the market can be set up so that all players will gain financially from the market working well.

Government support for the implementation of superfast broadband and the development of a viable market to support it in one or two areas would be a very effective use of public funding.

Once the market model has been demonstrated in one or two cities, other cities and towns will follow suit. Each is likely to add new service ideas and the business case will become stronger and stronger. With the increasing numbers and scale of the services being delivered, it would become viable to set up local networks for settlements of an ever decreasing size.

Once the commercially viable roll outs had run their course, it is likely that only a very small percentage of homes would not be covered and some level of subsidy could then be justified to deliver a 100% superfast broadband nation.

One model of a market structure to support superfast broadband

Given that many of the new service providers and infrastructure owners will have a local focus; it would make sense to structure this market with a focus on locality.

The market needs to be put together by the participants concerned, with the help of a trusted third party. Only in that way could there be any assurance that it would work for everyone.

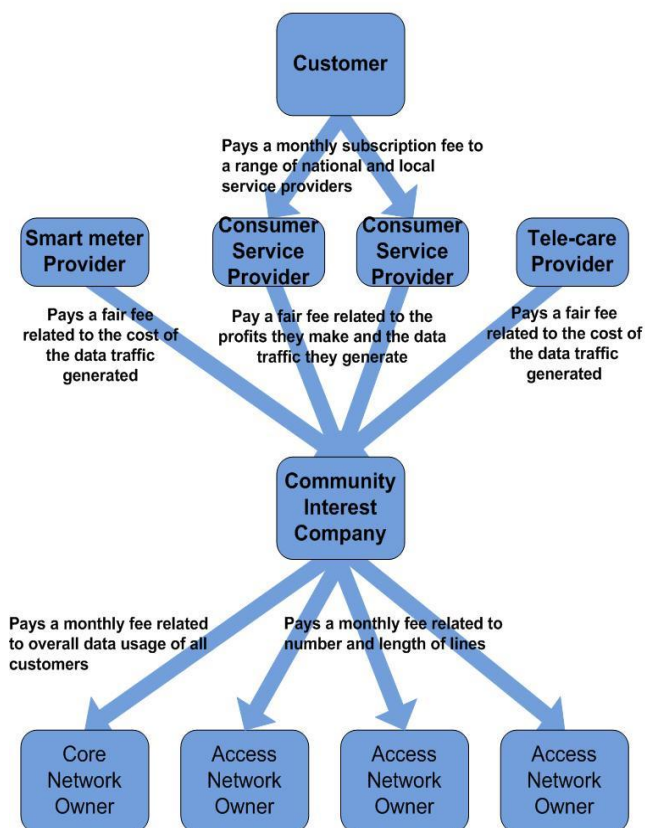
However, it is worth looking at one possible scenario here purely as a way of illustrating how this might work.

A Community Interest Company (CIC) could be set up to manage the services delivered within a locality. The CIC would work with all infrastructure owners to ensure a common technical, commercial and business process approach towards service providers. It would ensure that the charges for using the infrastructure are fair to the providers and would provide sufficient incentive for the development of connectivity to every home and business within that locality.

It could also work with all Communication Providers and other potential service providers, both national and local, to set a fair price and process for the use of the infrastructure. It would do this in a way that would reflect the differences between providers who offer services to be paid for by the consumer and those which would be paid for by the service provider – such as health and social care services. It will also provide fair pricing and easy processes for those services that will simply use the local infrastructure, such as smart metering and neighbourhood cctv and wireless broadband services.

The service providers that offer services to be paid for by the consumer would market their services directly to the consumer and would bill the consumer directly. The simplest scenario would then be for the

One possible way the market could be structured



Community Interest Company to act as the billing agent for the infrastructure providers. The service provider would pay the CIC for the use of the infrastructure and the CIC would pay the various infrastructure providers the appropriate fees for the carriage of the service, while taking a percentage to cover its own expenses.

The Community Interest Company would have the role of overseeing this whole process, to make sure that it is easy for customers to purchase services and easy for suppliers to provide them. It would continue to review the market to ensure that it could be tweaked from time to time as cost elements change and as new services become available.

It could also collaborate with CICs in other areas, via a national co-ordinating body, to ensure that all areas have a consistent approach, both technically and commercially and to benefit from new services developed in other areas.

The approach described above is merely one of many possible approaches.

The important task is to bring together all the key potential players in the superfast broadband market and develop a structure that will best enable them all to play their part.

Public subsidy could lead to waste and hinder innovation

There is a real danger in simply providing public subsidy for the costs of rolling out the infrastructure required. There would then be no real pressure to review the market structure and it would be left to continue more or less in the same form as it is today. This would make it more difficult to introduce the new and innovative services that would really make the superfast broadband market fly. As a result, not only would many of the potential benefits be lost, but also the business case would be weaker as there would be less revenue generated.

Government intervention in this way would therefore lead to stifling of innovation, and the cutting back of new business opportunities.

On the other hand, supporting the development of a strong market, with many revenues streams, would make it commercially viable to connect up a much larger percentage of UK households. This would mean that much less Government support would be needed to provide 100% coverage.

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Exploiting opportunities of streetworks for the installation of ducting

1. Summary

The large number of streetworks taking place throughout the UK provides a potentially significant way of cutting the cost of the roll out of nga, as has been identified in the Caio review.

Better co-ordination between utilities will not help a great deal.

However, providing clarity about the process and the regulation could open up an attractive opportunity for investment.

In this way a small piece of work undertaken by Government to clarify some of the issues involved could unlock money from the private sector to help the roll out of nga in the UK.

2. Background

One of the key recommendations of the Caio review regarding what can be done now to facilitate the roll out of next generation access broadband is:

“Lower cost of civil works through a better coordination of streetworks”

The review suggests that:

“most of this cost of roll-out is likely to be in the civils component, i.e. the physical installation of lines and equipment.

This suggests that the greatest scope to reduce the costs of roll-out would come from any measures that could reduce the cost of streetworks. The Department for Transport has estimated some 1.2 million utility-related streetworks per year, of which around 20% are telecoms related. Other estimates suggest the total number of openings might be twice that.

These two facts point to the value (in terms of reduced cost) of shared works.” Caio Review p. 61

The report also pointed out that:

“According to the Broadband Stakeholder Group, a roll-out of Fibre-to-the-Home to 80% of the population could cost up to £16 billion, of which more than £12 billion will be the civil engineering cost – in other words saving only 10% of the civils cost could mean £1 billion.” Caio Review p 13

Grasping the opportunity of streetworks to lay ducting at low cost is clearly therefore an issue worth tackling as it could save significant amounts of money in the roll out of next generation access and could therefore make the businesses case that much easier.

The problem is that the Caio review focused on better co-ordination as the solution. However, it is clear that this is not really what is at issue.

3. Co-ordination of streetworks

Better co-ordination of streetworks is an important issue and a lot of work has been done over recent years to develop regulations and guidelines to facilitate this. For instance there is “A Good Practice Guide to Managing Works in the Street” a Department for Transport and Highway Authorities and Utilities Committee Good Practice guide published in May 2007.

However the major objective in all of these is the minimising of disruption, in order to ensure that the same piece of road is not dug up several times over a short period of time. In fact simple co-ordination of streetworks would not greatly affect the roll out of fibre to the home or to the cabinet.

There are well established gas, electricity and water supply networks throughout the UK, reaching almost every home or business premises. The same is true of BT's copper network. Managing each of these networks involve long-term maintenance and upgrade plans, which all require significant amounts of streetworks to be undertaken.

Proper co-ordination allows the different utility companies to be aware of each other's planned streetworks and therefore enables them to bring forward or put back work for a few months in order to co-ordinate with other streetworks to minimise disruption. It may also save costs, although this is not mentioned in the documentation.

This is a very different situation to the need to minimise costs in laying a completely new fibre access network around the country.

4. Key facts

At the moment there is very little fibre to the home in the UK. However, there is a clear consensus that the vast majority of homes will be connected by fibre within the next 10 to 20 years. The Caio Review says:

"But we cannot afford to underestimate its impact over the next ten years. Over that time:

- *broadband will become an essential digital utility for the country; and*
- *an extensive upgrade of the access infrastructure will be necessary"* Caio Review p. 6

So we know that over the next ten to twenty years fibre will need to be laid to link the majority of homes in the UK.

While it is likely that BT will eventually deliver a large proportion of fibre connections in the UK, there will be a significant percentage delivered by other agencies. *"NGA will most probably result from a combination of national and local networks."* Caio Review p 11. At this present time there is no way of telling who will install which bit of the national fibre access network.

It is also true that the timetable regarding when any particular area or neighbourhood will get fibre to the home is difficult to determine at the moment. It is also likely that fibre to the cabinet will be an intermediate step for many areas.

The result is that, while it is clear that there will be fibre to the home eventually, the uncertainties about who is going to be rolling out fibre, where, and in what time frame, mean that there are no extensive plans for streetworks in connection with fibre roll outs that need to be co-ordinated with other streetworks.

In any case the point underlying the issue raised in the Caio Review is that streetworks provide an opportunistic way of saving money on fibre roll outs. In other words it is about laying ducting whenever and wherever streetworks are taking place in the expectation that they would someday be used for a fibre access network, rather than about co-ordinating existing plans for laying fibre with other planned streetworks.

The challenge is that given that it is not clear who would eventually install a fibre network in any particular area, it is not something that BT or any other Communications Provider can reasonably be expected to invest in.

5. The actual work needed

So, while the Caio Review makes a strong case for exploiting the opportunities of streetworks to ensure that ducting is laid, it is clear the co-ordination of streetworks is not really the issue.

In order to take this forward, the first task would be to quantify the actual size of the opportunity. New technologies used by utility companies, mean that there are fewer long continuous trenches dug as part of streetworks now, as minimum or no dig techniques are used instead, wherever

possible. So it would be sensible to undertake a small piece of work to assess what percentage of the 1.2 million utility-related streetworks undertaken every year could be used to lay ducting and how many kilometres of new ducting could be laid in this way and how much that would save of the overall costs of laying the fibre.

Should that piece of work indicate that streetworks do in fact provide a significant opportunity for cutting the cost of laying a fibre network, it would then be useful to undertake a number of other pieces of work:

- First of all, it would be important to find out whether there is already adequate provision of ducting or fibre already serving any particular area. There would no point in duplicating what is already there. So a methodology would need to be developed to do this.
- Secondly, if, the laying of ducting would be beneficial, there needs to be a way of deciding what ducting needs to be laid. Is the route likely to serve a large neighbourhood or business area and so require a major piece of fibre trunking, or is it likely to be a side route linking just a few premises? Is there a need to lay several separate ducts to allow them to be used by a number of different Communication Providers, or would one be enough? Provision also needs to be made for linking to street cabinets and chambers to allow the later laying of sub ducts to serve groups of homes. Guidelines would need to be written for this.
- Thirdly, there needs to be a way of ensuring that whichever utility is undertaking the streetworks would undertake the extra work of laying the ducts and do so according to the correct standards. So decisions need to be made about whether they should be paid for this, and if so, how should the payment be calculated and whether there is any other incentive that might be used.
- Fourthly, the ducting itself needs to be paid for by some agency or other and the agency concerned and the source of the funding needs to be identified.
- Following on from this, there needs to be clarity regarding who would own the ducting and manage it longer term. Should this be a local company or a national agency? Should it be a fully commercial entity or, for instance, a Community Interest Company? How could this agency be set up or regulated?
- Finally, there needs to be clarity and consistency regarding under what conditions the ducting could be provided to Communication Providers for laying their own fibre. Should ownership be retained to ensure that there would be long term benefit for the local area and therefore the ducting be leased, or would it be simpler if it were sold as soon as a Communications Provider wished to use it?

Until these issues are clarified, it will be difficult to exploit the opportunities that streetworks provide to facilitate the roll out of NGA in the UK.

However, once clarity is achieved, it is likely that the costs of laying and of managing the ducting could be paid for on a fully commercial basis, while still providing significant savings on the roll out of fibre.

The cost of ducting is very low and the cost of managing it, ie keeping a record of what ducting has been laid where, would also be very low. On the other hand, the savings on the cost of having to dig to lay new ducting could be considerable. Gaining the investment needed to pay for and manage ducting laid as part of streetworks should therefore be easy to achieve as it would provide safe and dependable returns over the long term.