



Super-fast broadband

Context and summary for Ofcom's consultations on
the wholesale local access and wholesale broadband
access markets

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Section 1

One page overview

Super-fast broadband is expected to deliver significant benefits to consumers

- 1.1 Broadband is becoming increasingly central to the lives of UK consumers and the success of businesses. Through their broadband connections, consumers are able to access and interact with a wide range of content and services and businesses can exploit new market opportunities. The current generation of broadband services in the UK have become a success story with competition, based largely on the use of local loop unbundling, driving choice and innovation, low prices and high take up.
- 1.2 The increasing number of consumers using their broadband connections for activities such as downloading or streaming videos and music, is beginning to limit the current networks. New networks being introduced today, using fibre optical cable to deliver super-fast broadband services, are expected to deliver significant benefits to UK consumers.
- 1.3 Super-fast broadband (i.e. broadband with speeds greater than 24Mbps) will provide consumers and businesses with higher speed and more capable services, which are likely to enable the use of a wide range of new and innovative applications. These could, for example, include super high definition and 3D video services, more effective teleworking and telemedicine.

Ofcom's regulatory approach will continue to focus on promoting both investment and competition

- 1.4 Our aim for the last few years has been to support the delivery of super-fast broadband to consumers and businesses through an appropriate regulatory environment that promotes both investment and competition. Over the past two years we have seen commercial investments in next generation access networks deliver super-fast broadband to UK consumers. With super-fast broadband now available to around half of UK households, roll-out here is ahead of many countries, particularly in Europe. To support the future development of the market, it is important that we now focus on defining in detail what regulations may be needed to support continued investment and competition.
- 1.5 We would like to see companies able to compete by investing in these new networks. At this early stage in the development of super-fast broadband, other communications companies indicate that they may prefer initially to be able to deliver services over BT's network rather than build their own. Therefore we propose that BT should make wholesale virtual unbundled local access (VULA) available to other communications companies on the same basis as to itself. We are also proposing to require BT to offer access to its ducts and poles so other players can either build out to areas BT does not plan to deploy its fibre network to, or to target a specific area earlier than BT. This will also allow BT's competitors to use ducts and poles in the future if access becomes more economic over time.
- 1.6 To ensure BT's incentives to invest are not damaged by this approach, we propose BT should have freedom to price VULA, while access to ducts and poles should be priced at a level that reflects BT's costs with suitable allowance for risk. We believe there will be no detriment to consumers as BT's VULA prices will be constrained by the wider competitiveness of the broadband market.

Section 2

Context and summary of proposals

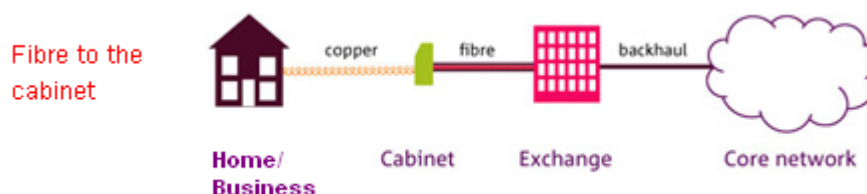
Super-fast broadband is set to deliver significant benefits to UK consumers – our regulatory approach aims to ensure consumers can reap these benefits

- 2.1 Over the past few years, current generation broadband has become part of the life of the majority of UK consumers, enabling them to access and interact with a wealth of content, communications and entertainment services. Broadband has changed the way consumers book holidays, pay their bills, search for jobs, keep in touch with friends and family, listen to music and watch video. For businesses, broadband offers access to new markets, new ways of delivering services and more convenient and cost effective ways of handling transactions with customers.
- 2.2 Today's broadband and voice services are delivered mostly over a copper network built at a time when BT was a monopoly communications provider, upgraded over recent years to support new services such as broadband. Over the past few years, much of Ofcom's focus has been on enabling competition in the broadband market to stimulate innovation and deliver competitive prices by encouraging efficient investment by competing providers in local loop unbundling. This allows other operators to physically take over or share BT's copper lines into homes and businesses and develop their own retail propositions.
- 2.3 This approach has delivered significant benefits, resulting in wide broadband availability, high take-up and extensive choice of services at ever reducing prices. It has also enabled Ofcom to deregulate large parts of the intermediary¹ market for wholesale broadband services which support the retail offers made in the market.
- 2.4 With an increasing number of consumers using broadband connections more extensively, the limits of current generation copper based broadband are becoming increasingly evident. For example, as customers wish to watch ever higher quality video material, or share content they have created with others, the constraints of the pipe connecting their home to the internet will start to limit their choices. This will be particularly true for consumers living far away from the telephone exchange who are more limited in terms of the broadband speeds they actually get.
- 2.5 New technologies, including fibre optic cable rather than copper, offer the potential for higher speeds – such services are often called super-fast broadband. Super-fast broadband (which is usually taken to mean broadband at speeds higher than 24Mbps) will enable consumers to access high definition video services or other bandwidth-hungry content and audio-visual services over the internet with ease. In addition, multiple simultaneous users within a household or business will be able to get fast access over the same line. In the future there is also significant potential for innovative applications to emerge whether for public services like telemedicine or for commercial businesses like effective teleworking. Super-fast broadband may also underpin an online economy where consumers and online businesses can trade and develop new applications and services, as well as create opportunities to drive the UK's innovative and creative industries.
- 2.6 These new services are already being supported by recent commercial investments in super-fast broadband across around half of UK households, complemented in

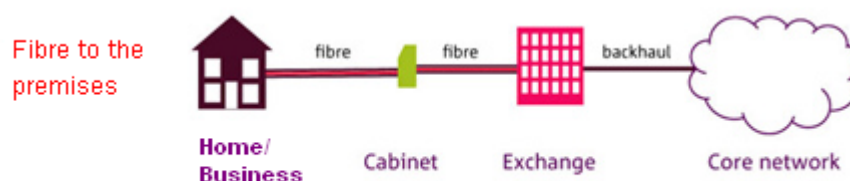
¹ This is the market between retail broadband and wholesale local access or LLU

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some areas by public and community schemes. Virgin Media has upgraded its fibre-optic based cable network to enable higher speeds. All BT's upgrades involve using fibre-optic cable rather than copper wires for some or all of the connection between the telephone exchange and the home or business. When fibre is used between the exchange and the street cabinet serving a group of premises, but copper is left between the cabinet and the end premises, super-fast broadband is called fibre to the cabinet (FTTC).



If fibre goes all the way between the exchange and the end user, super-fast broadband is called fibre to the premise (FTTP).



- 2.7 Ofcom believes investment and competition in super-fast broadband is important for consumers and citizens in the UK. Over the last four years, we have been working to promote investment and competition in new super-fast broadband. We have looked at the costs and practical issues concerning the deployment of relevant technologies as well as the experiences of other countries in which they are already being used extensively (particularly Asia and North America). We have sought views from our industry stakeholders about regulatory approaches to stimulate investment and support competition. We have also provided analytical and technical support to work by the Government considering how to extend investment in super-fast broadband beyond privately funded initiatives.
- 2.8 A year ago we set out our approach for enabling both investment and competition in super-fast broadband in our statement “Delivering super-fast broadband in the UK”².
- 2.9 Today marks the next key step in defining the detail of the regulations we are proposing to apply to support competition and investment in super-fast broadband which will influence the future development of the market. We have published two market reviews which set out the detailed regulatory measures we propose to take. One is in relation to the UK local infrastructure market (the wholesale local access market) which supports the delivery of broadband and voice services³. The other covers the wholesale broadband market which underpins the retail broadband services which consumers buy⁴. These proposals look at both today’s current competitive conditions as well as ahead to likely future developments over the next few years.

² See http://www.ofcom.org.uk/consult/condocs/nga_future_broadband/statement/statement.pdf

³ See <http://www.ofcom.org.uk/consult/wla/>

⁴ See <http://www.ofcom.org.uk/consult/wba/>

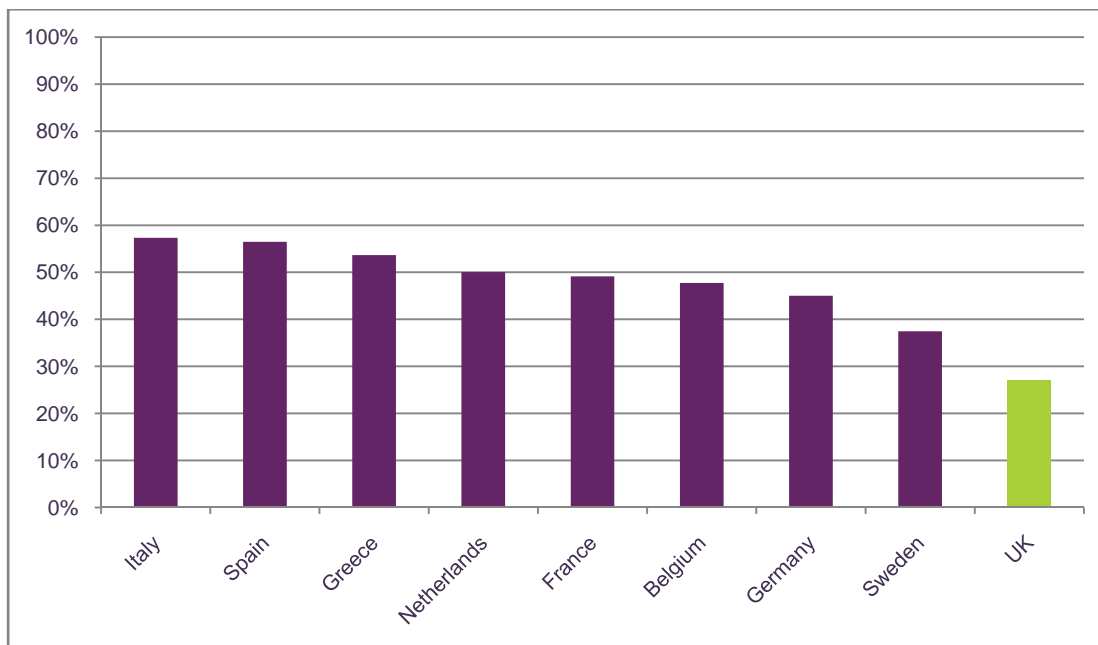
2.10 We have also published today a decision which will enable BT to proceed with its deployment of fibre to the premises infrastructure in a way that will avoid unnecessary cost duplication⁵. This follows a similar decision we made in June 2009 in relation to BT's deployment of fibre to the cabinet⁶.

To secure these benefits, regulatory approaches need to support both investment and competition

2.11 Effective competition in today's broadband market has delivered substantial benefits to UK consumers. The UK has one of the most competitive broadband markets in Europe, based on prices, choice and take-up.

2.12 Despite BT having been the incumbent telecoms operator, it only has a 26% retail market share.

Retail market share of the incumbent telecoms operator



Source: ECTA broadband scorecard, Q1 2009

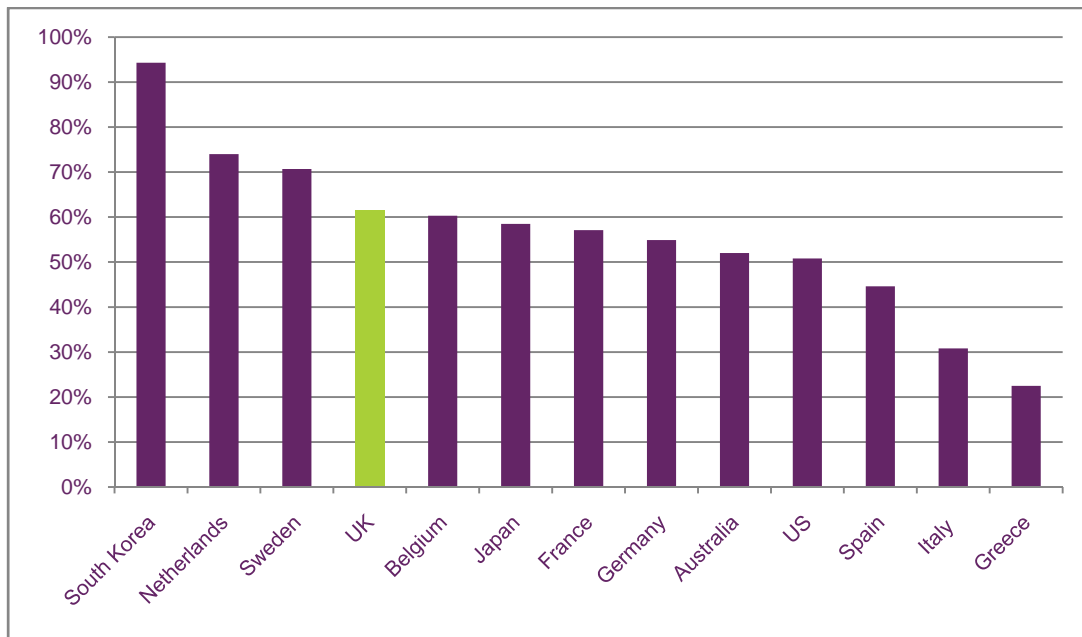
2.13 Based on the latest available international comparisons, fixed broadband take-up was at 61.5% of UK households in 2008, which was ahead of the US and most larger European countries. Take-up in the UK has continued to increase to 66% by Q4 2009.

⁵ See <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/fttp.pdf>

⁶ See <http://www.ofcom.org.uk/consult/condocs/fttc/statement/>

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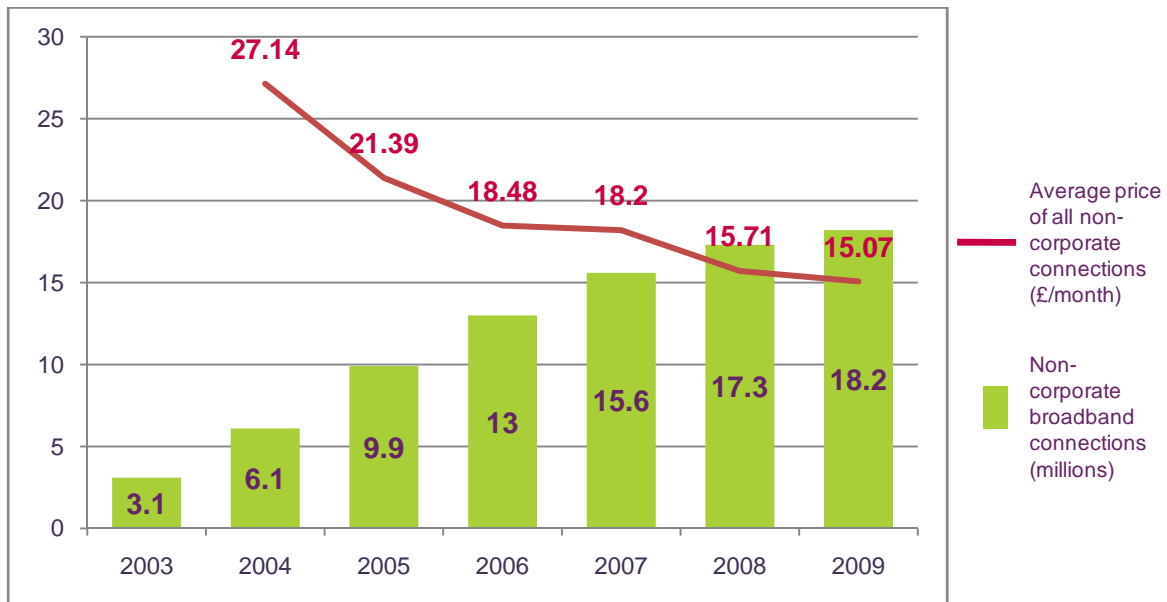
Household broadband penetration rates – international comparison 2008



Source: OECD

2.14 Competition has also driven lower prices, more choice and greater innovation. UK broadband adoption has grown almost three-fold in five years and consumers have benefited from increasing broadband speeds at prices that have fallen steadily over time.

UK trends in fixed broadband take-up and standalone broadband pricing



Source: Ofcom / Operators

Note: Data as at Q4 of each year. Note that consumers who purchase their broadband as part of a bundle, including telephony and in some cases also TV typically pay less for their broadband than the numbers in the chart above would suggest

- 2.15 Current generation broadband required significant new investment to make it a success, but super-fast broadband will require much higher levels of investment as it involves new cabling as well as new electronic equipment. This carries uncertainty and risk.
- 2.16 Our approach to super-fast broadband recognises the importance to UK consumers of securing both investment and competition. The proposals we have set out support both these objectives and are flexible enough to take account of differences in market conditions across the country.

The private sector is moving ahead with investments today, complemented by other players

- 2.17 Since publishing our statement on super-fast broadband, Virgin has completed its rollout of 50Mbps broadband to all households passed by cable, some 46% of UK households. It has also announced plans to start upgrading its network to 100Mbps by the end of 2010⁷ as well as a trial testing the use of telegraph poles as a means of aerial deployment to extend its 50Mbps offer to potentially another one million homes⁸.
- 2.18 BT has also recently launched its super-fast broadband to consumers in several parts of the country and plans to cover 40% of homes, 25% with fibre to the premises and 75% with fibre to the cabinet, by the summer of 2012.
- 2.19 Other smaller scale investments have also been made in different parts of the UK. For example smaller operators, such as IFNL in Corby and Hampshire, have been providing fibre to the premises services in new build developments. In addition, some companies have been using alternative ducts to deploy super-fast broadband services. For example, H2O Networks has been using sewers in Bournemouth and Dundee to deploy fibre optic cables.
- 2.20 Availability of super-fast broadband in the UK (some 46% of homes) is now ahead of most large economies where deployments have been funded commercially. In the US, AT&T and Verizon have upgraded their networks to cover 17% and 12% of households respectively⁹ while cable company Comcast is approaching coverage of around 35% of US households with super-fast cable broadband¹⁰. In Europe, super-fast networks are available to 21% of households in France¹¹ and 23% of households in Germany¹² though in the Netherlands they are already available to 90% of households.

⁷ <http://pressoffice.virginmedia.com/phoenix.zhtml?c=205406&p=irol-newsArticle&ID=1395257&highlight>

⁸ <http://uk.reuters.com/article/idUKTRE62A1EZ20100311>

⁹ IDATE, Ofcom analysis

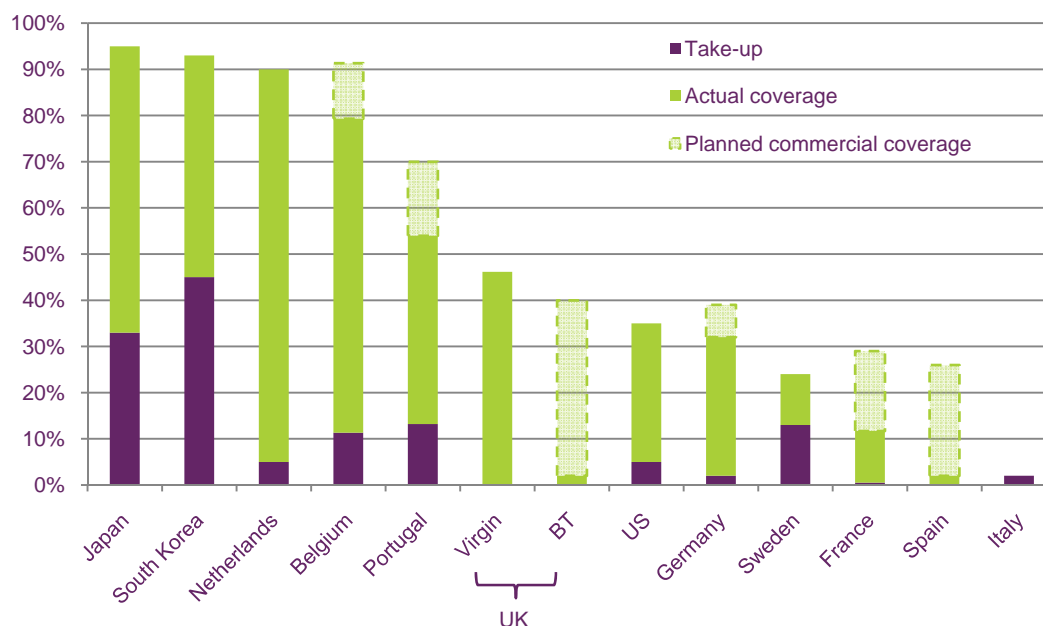
¹⁰ Note that the 35% of homes covered by Comcast is likely to overlap with the footprint of AT&T and Verizon

¹¹ IDATE, Ofcom analysis

¹² IDATE, Ofcom analysis

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Current and targeted super-fast broadband coverage



Source: Cullen International February 2010 estimates and Ofcom estimates based on press releases by operators and governments

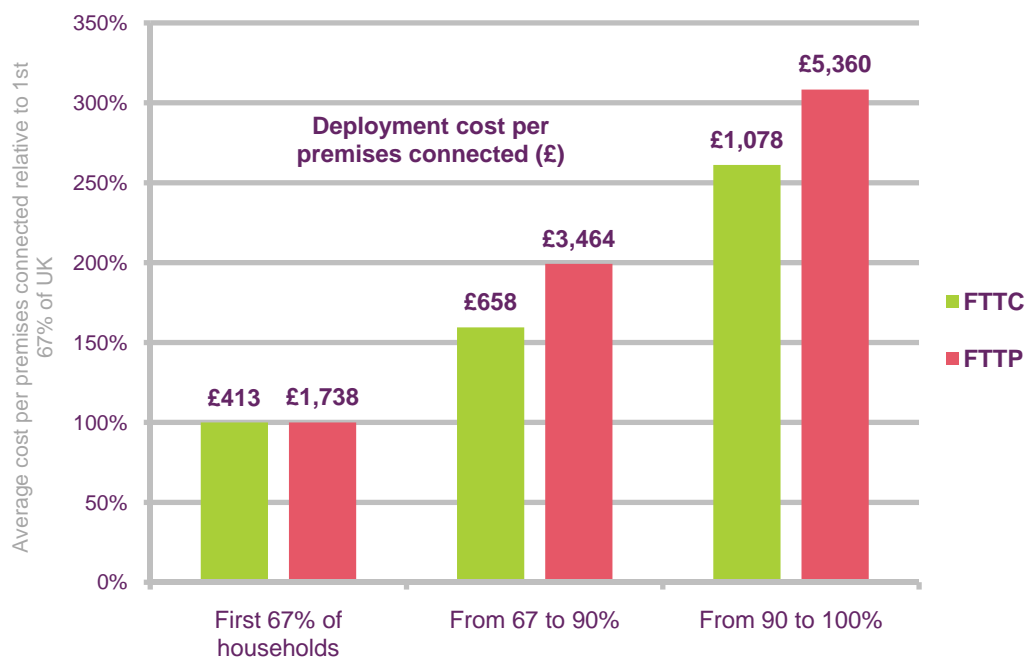
- 2.21 Aside from small urban countries with highly concentrated populations, like Singapore, the main countries which are currently leading in the roll-out and take-up of super-fast broadband are those which have had significant government intervention to support deployment, such as Japan and South Korea.
- 2.22 In Japan, for example, telecoms operators benefit from a range of favourable government policies. These include preferential corporate tax and fixed asset treatment, interest subsidies and debt guarantees. In addition, grants are available for establishing local communications infrastructure 'to bridge the communications gap' and for high speed public networks for connecting schools, libraries and town halls. The government also set specific targets for super-fast broadband availability. It has encouraged the achievement of these targets by supporting only limited infrastructure competition to date. In South Korea, the government incorporated super-fast broadband as part of its industrial policy. It invested heavily into the building of a new high speed backbone network and provided soft loans to communications providers wishing to deploy super-fast fibre access networks.
- 2.23 Mobile technologies are also evolving and mobile operators in the UK and elsewhere are keen to launch the next generation services known as 4G (fourth generation) mobile. While we do not expect mobile broadband to be a direct substitute for fixed line super-fast broadband over the next few years, we consider that over time, consumers will benefit by having access to a broader range of broadband delivery options¹³.

¹³ Supporting very high speed broadband over mobile networks tends to be costlier than over wireline networks. Also, 4G technologies have yet to be deployed in the UK

The public sector may well play an important role in super-fast broadband to complement commercial deployments in the UK

2.24 Few stakeholders currently believe private sector investments in super-fast broadband will cover the whole of the UK by themselves. Work carried out by the Broadband Stakeholder Group suggests that the cost of deploying super-fast broadband to the last 10% of households is up to three times higher per home than for the first 67%¹⁴.

Cost of coverage by percentage of population covered



Source: Adapted from Analysys Mason data for BSG

2.25 Securing super-fast broadband investment in areas where it is not economic to do so is not a matter that regulation can solve. Both the Government and other parties have suggested some form of public intervention may be necessary to support super-fast broadband deployment to areas where the market is not likely to go to:

- The Digital Economy Bill currently being debated in Parliament aims to ensure a minimum speed of 2Mbps to all homes in Britain by 2012 and the delivery of super-fast broadband to most of the country by 2017. A 50p per month duty on all telephone lines has been proposed by Government to support the deployment of super-fast broadband to the 30% of the country that its analysis suggests will not be reached by market forces alone.¹⁵ The Government has recently expanded on the Digital Economy Bill, pledging super-fast broadband access to all homes by 2020.
- The Conservative party has also set out a target to make the UK the first major European country that has 100 Mbps super-fast broadband in the majority of homes, with a target of 2017. It has stated that if the market does not deliver this

¹⁴ http://www.broadbanduk.org/component/option,com_docman/task,doc_view/gid,1036/Itemid,63

¹⁵ See <http://news.bbc.co.uk/1/hi/technology/8529015.stm>

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in certain areas, it will consider using the proportion of the licence fee dedicated to digital switch-over to finance super-fast broadband roll-out under the new BBC licence fee settlement, starting in 2012.

- 2.26 In the UK to date a number of community and regional development schemes have started deploying high speed broadband networks. In South Yorkshire, a partnership between four local authorities has attracted European, regional, local and private investment totalling £90m, and plans to provide a high-speed, open-access infrastructure offering 25Mbps broadband reaching 1.2 million people.¹⁶ Cornwall has also received European convergence funding which will support a £100m investment in super-fast broadband.
- 2.27 Public sector investment can play an important role in super-fast broadband just as it has in current generation broadband in a number of areas. Public sector investment raises the possibility that operators other than those with market power (i.e. other than BT currently) could be partners in such investments and, consequently, be the only provider delivering super-fast broadband in certain areas. Although our regulation currently does not cover operators who have not been found to have market power, we consider it desirable for infrastructure operators in these instances to provide access to other service providers on a fair, reasonable and non-discriminatory basis through fit for purpose wholesale access products.

Our proposed regulation aims to ensure that consumers gain the greatest benefit from market investment in super-fast broadband

- 2.28 Our overall aim is to ensure consumers have timely and widespread access to super-fast broadband services from a range of players. Where communications providers have market power, achieving this aim may require regulation. By virtue of its legacy network, we are proposing BT retains market power across the UK in local access to broadband.
- 2.29 There are two main ways for regulation to achieve our aim:
- **Wholesale service (virtual unbundling)** - at this early stage of super-fast broadband, there appears to be greater demand initially from other communications providers to use wholesale virtual unbundling products from BT rather than investing in parallel networks. We propose BT should make these products available to other communications providers on the same basis as itself. If virtual unbundling proves successful, other communications providers may want to deploy their own competing fibre infrastructure at a later point, using access to BT's ducts and poles.
 - **Duct and pole access** - we would like to see companies competing by making investments in super-fast broadband – this gives consumers the choice of buying services from different networks operators. Given our initial assessment that BT continues to have market power in the wholesale local access market, we propose opening BT's ducts and poles so other players can build their own networks more easily. We consider this will be of more interest in areas where BT has not yet deployed its super-fast broadband network.

¹⁶ <http://www.yorkshire-forward.com/news-events/news/press-releases/south-yorkshire-pioneers-super-fast-broadband-with-multimillion-pound-project>

At this early stage of super-fast broadband, there appears to be more demand for wholesale access to BT's network than its duct and pole infrastructure

- 2.30 While there is some interest in duct and pole access, for example Virgin Media's recent announcement of its fibre over telegraph pole trial in Berkshire, most of BT's competitors are telling us they are more interested in wholesale virtual unbundled local access (VULA) products giving them access to the network BT will deploy. This is largely due to the ongoing uncertainty over consumer demand for and willingness to pay for super-fast broadband limiting interest in infrastructure investment.
- 2.31 As a result, in areas where BT rolls out its own super-fast broadband network, the most cost-effective and straightforward way of supporting competition is to allow other operators to access that new network. Therefore, we are proposing BT should provide VULA based on Ethernet technology to deliver voice, video and internet services.
- 2.32 Such a product will allow maximum flexibility and capacity for innovation while minimising cost duplication. In these respects, this virtual product allows communications providers a level of control similar to local loop unbundling products.

We are proposing that BT offer access to underground ducts and overhead telegraph poles to give others the chance to invest

- 2.33 Our focus is on creating the right conditions for widespread commercial deployments of super-fast broadband. We want to give options for contestable investment; as soon as any communications provider sees a case for deploying a new fibre access network it should be able to make such an investment. This can result in end to end infrastructure-based competition. In turn, this can provide better outcomes for consumers as a result of more retail service competition, differentiation, and service and price innovation.
- 2.34 Contestability also delivers other benefits, including: the ability for competitors to roll out networks more quickly than BT; the chance to deliver super-fast broadband in areas outside those covered by BT's investment plans; and the choice for other communications providers to use different or more advanced fibre technologies than BT.
- 2.35 However, investing in new networks is expensive. BT's competitors are more interested, at least initially, in using VULA where BT has deployed its super-fast broadband network, but where it has not, they require alternative forms of access. Our research shows that deployment costs can be reduced if communications providers are able to make use of existing infrastructure, including underground duct and overhead telegraph poles. BT already has this option. As a result of our preliminary finding of market power on BT, we are proposing others should have the same option. We are therefore proposing a requirement on BT to offer access to its ducts and poles. As a result, BT will be obliged to publish the terms of its offer, including pricing details and information on the available capacity and quality of its ducts.
- 2.36 Access to other ducts, including those of telecoms operators without market power and alternative wayleaves such as sewers and water, may also help reduce the cost of network deployment. In other countries, for example Portugal and Austria, there has been government action to ensure access to other types of ducts other than telecoms, especially energy and water. Today, access to both alternative wayleaves and ducts of communications providers without market power are outside the scope

of Ofcom's legal powers. However, the recently revised EU Framework Directive¹⁷, due to come into effect during 2011, introduces the possibility that Ofcom may in future have the power to impose infrastructure sharing obligations on other communications providers regardless of market power.

- 2.37 Lastly, we are also proposing to keep the obligation on BT to offer sub-loop unbundling. This allows another operator to take over part of the telephone line between a street cabinet and the customer premises, deploy their own street cabinet and offer FTTC-based super-fast broadband. While there has been very limited use of sub-loop unbundling so far, we believe it could have a role to play, particularly in areas which may attract public funding in future.

We believe BT should be allowed flexibility in setting prices for VULA but prices for ducts and poles should reflect BT's costs

- 2.38 It is important that requirements placed on BT, especially access prices, do not discourage BT's own investment in super-fast broadband to the detriment of consumers overall.
- 2.39 We are not proposing to regulate the price BT charges for VULA. This will allow it the chance to experiment with different pricing approaches in the face of uncertain demand. It will also allow BT to manage the risks of its investments better, react to emerging developments in the level of demand and to ensure it can earn a rate of return on investment.
- 2.40 We believe this is the appropriate pricing approach given the presence of both direct and indirect pricing constraints that limit BT's ability to charge too much for these products. Strong competition in current generation broadband, based largely on local loop unbundling will help constrain the prices that BT can charge. Competition for potential customers of super-fast broadband from Virgin Media is another constraint. In areas where there is not this strong competition (currently about 28% of the UK), BT's obligations to provide wholesale broadband on reasonable terms will also provide a safeguard against excessive pricing.
- 2.41 As for the pricing of access to ducts and poles we want to make sure that BT is not discouraged from investing in super-fast broadband. If prices are set too low, BT may be dis-incentivised from rolling out extensively. If prices are too high, other players may not be willing to invest. We are therefore proposing that prices for access to ducts and poles reflect the costs of providing these. In circumstances where BT has to invest in new ducts and poles for the deployment of super-fast broadband, we are proposing that BT's prices for access to these would take proper account of the risks associated with those investments.

Our support for competition in current generation broadband services will continue where it is needed

- 2.42 Today 78% of consumers use broadband services delivered over BT's current generation network. While this is likely to change over time as BT and others roll out super-fast broadband, current generation broadband will continue to be very important for many consumers. Our aim is to promote investment and competition where this can be effective. At the same time, if competition is not working effectively in certain areas or circumstances, it is important that we continue to provide protection to current generation broadband consumers as appropriate.

¹⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009L0140:EN:NOT>

- 2.43 This means a continued focus on local loop unbundling, which has resulted in deregulation of other wholesale broadband services in around 72% of the UK, and a focus on wholesale broadband service in the remaining 28% of the UK where local loop unbundling is not delivering effective competition for consumers. In the areas where local loop unbundling is not delivering effective competition we are proposing safeguards to make sure consumers are not charged too much for their broadband service. This means access obligations on BT for wholesale services combined with either cost orientated prices in areas that are prospectively competitive or regulated prices in those areas where competition based on local loop unbundling is less likely.

We are consulting on our proposals to continue to support the deployment of super-fast broadband

- 2.44 UK consumers and businesses have benefited from the development of broadband to date. Commercial investments in super-fast broadband are now well underway and almost half the UK population today has access to at least one super-fast broadband network which places the UK in a favourable position internationally. Our proposals aim to build on this by:
- Promoting investment and competition in super-fast broadband by requiring BT to offer:
 - i) access to its ducts and poles UK-wide with prices set by BT and which reflect its costs and risk;
 - ii) access to wholesale access products in areas where BT rolls out super-fast broadband at prices that BT has flexibility to set;
 - Continuing to support competition in current generation broadband; and
 - Protecting consumers from excessive pricing in geographies where there is limited / no broadband competition today.
- 2.45 While this document outlines our proposals and attempts to set them in a broader context, our formal position and detailed supporting analysis, is provided in the consultation documents themselves. We invite comments from interested parties on the proposals in these documents, which we are publishing today. The consultation period runs for 10 weeks to 1 June 2010. We expect to publish our conclusions in the autumn.