

Response to Ofcom's
Strategic Review of Digital
Communications Discussion Document
by the
Infrastructure Investors Group



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Report by GOS Consulting Limited



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1 Introduction

- 1.1.1 This response is provided on behalf of the Infrastructure Investors Group (IIG) consisting of CityFibre Infrastructure Holdings plc, euNetworks Networks Group Limited, Virgin Media plc, and Zayo Group LLC
- 1.1.2 The IIG welcomes Ofcom's Digital Communications Review (DCR) and looks forward to participating in an open and constructive discussion about how to best deliver ultrafast digital communications that ensures technology advancement and that the needs of business and residential consumers are met.

2 The Infrastructure Investors Group

2.1.1 The Infrastructure Investors Group (The IIG) is a collective of alternative infrastructure providers who have built, own and operate fibre-based networks within the UK, independently of BT. Whilst normally members of the IIG compete with each other, they believe the issues being discussed here have such significant and far-reaching consequences for the future of the industry, that a joint response to the discussion document is required to give a voice to those that invest in end-to-end infrastructure, and that collaboration and solidarity is required to ensure the full weight of their argument is appreciated.

2.1.2 This response is submitted to complement the individual responses submitted by the IIG members.

2.2 CityFibre Holdings

2.2.1 CityFibre, the largest independent provider of fibre infrastructure to UK mid-sized cities, enables gigabit connectivity through building, owning, and operating fibre optic network infrastructure for public sector organisations, service providers, mobile operators and businesses. The Group operates 543 route kilometres of local access networks serving 60 towns and cities. To date the Company has launched five Gigabit City projects in York, Peterborough, Coventry, Aberdeen, and Edinburgh. CityFibre is a member of a joint venture with TalkTalk and Sky, delivering Fibre-to-the-Premises (FTTP) networks for homes and businesses. Work is currently underway to connect tens of thousands of homes and businesses in York.

2.3 euNetworks

2.3.1 euNetworks is a Western European provider of bandwidth infrastructure services. It owns and operates 13 fibre based metropolitan city networks in 5 countries, connected with a high capacity intercity backbone covering 45 cities in 10 countries. euNetworks is the leading data centre and cloud connectivity provider in Europe, directly connecting over 260 key data centres, with further data centres indirectly connected. euNetworks was founded in 2002 and has its headquarters in London.

2.4 Virgin Media

2.4.1 Virgin Media is the second largest provider of broadband infrastructure within the UK. Its cable network – the result of multi-billion pound private investment – already delivers ultrafast broadband to over half of all UK homes, with speeds of up to 200Mb, as well as connectivity to thousands of public and private sector organisations across the country. Virgin Media is a part of Liberty Global plc, the world’s largest international cable company, together serving 24 million customers across 14 countries.

2.5 Zayo Group

- 2.5.1 Zayo Group is a global provider of bandwidth infrastructure services, including dark fibre, Ethernet and IP services. Zayo operates in the United States, France and the United Kingdom. Its UK fibre optic network spans more than 450,000km and connects over 130 data centres via unique routes alongside the national gas pipeline and within London's sewer system. Zayo was founded in 2007 and is headquartered in Boulder, Colorado, with European headquarters in London and Paris.

3 The structure of this response

3.1.1 Our (the IIG's) response is divided into three distinct sections, summarised below:

- The role and benefits of infrastructure competition
- How regulatory decisions impact on investment
- Competition model for the future

Our response is not strictly structured around Ofcom's specific questions but is intended to address the following questions in the Discussion Document:

Q1, Q2, Q6, Q7, Q11, Q12, Q29, Q21, Q22, Q23, and Q25.

4 The role and benefits of infrastructure competition

4.1 Introduction

- 4.1.1 In the DCR Ofcom asks stakeholders to submit views and evidence on whether promoting effective and sustainable competition remains the appropriate strategy to deliver sufficient investment and widespread availability of services for the majority of customers.
- 4.1.2 In our view, the promotion of effective and sustainable competition is the single most important and fundamental principle Ofcom should apply. A dynamic and competitive market at all levels of infrastructure and service provision has been proven to deliver significantly superior outcomes compared to outcomes in markets where regulation is imposed.
- 4.1.3 The IIG members have already invested considerably in the UK digital communication infrastructure and have plans collectively to invest in excess of £6b over the next 6-8 years. The IIG member investment provides end-to-end competition through both vertically integrated providers and wholesale network infrastructure level competition through the provision of wholesale dark fibre and other connectivity to other electronic Communication Providers (CPs).
- 4.1.4 As submitted in the IIG's response to the Ofcom Business Connectivity Market Review (BCMR)¹ consultations in August this year, the IIG is believes that infrastructure competition can deliver a vibrantly competitive digital communications market in the UK based on state-of-the-art fibre-based networks.
- 4.1.5 It is our strongly held view that competition throughout the supply chain can and will deliver vastly superior results when compared to the option of a market that is primarily based on regulated access to BT's infrastructure. This would be true even if BT had invested in modern access networks.

4.2 Background

- 4.2.1 The IIG members have already invested considerably in the UK digital communication infrastructure and have plans to invest in excess of £6b over the next 6-8 years. The IIG member investment provides end-to-end competition through vertically integrated providers as well as competition at the wholesale network infrastructure level through the provision of wholesale dark fibre and other connectivity to other electronic Communication Providers (CPs).
- 4.2.2 CityFibre has networks in over 60 towns and cities throughout the UK, with over 30,000 km of fibre in the ground. CityFibre's core investment plan is based around £3.0bn of projected infrastructure investment over the next 10 years and involves laying open access wholesale dark fibre infrastructure networks in circa 100 UK towns and cities. The ability to invest in

¹ The IIG's response to Ofcom's BCMR consultations is attached in Annex A to this document.

such networks is based on its business model which demonstrates sufficient return to investors, initially relating to the build of core network for business connectivity, and followed by further investment to extend the network to reach residential premises and allowing CPs such as Sky, TalkTalk and others to provide gigabit FTTH broadband services.

- 4.2.3 Virgin Media announced in 2015 that it is investing £3 billion to extend its network to cover an additional to connect a further 4 million homes and businesses to its network over the next five years.
- 4.2.4 euNetworks has invested roughly 20m Euros in fibre and duct assets in the UK over the past 5 years and it continues to invest 30% of its revenue (£103.4m revenue in 2014) in developing its network in the UK other countries where it operates (currently Ireland, Netherlands, Germany and France).
- 4.2.5 Zayo Group's business model is built around investing in (initially) loss-making customer deals that will fund network expansion, with losses to be covered by profits on business won subsequently on the newly-constructed infrastructure. For example, they recently spent \$185m in capital expenditure in Dallas, Texas to build a new duct network, based off a contract win with a large wireless carrier. This speculative investment strategy is one they hope to pursue within the UK, however they are reviewing the viability of such investments in the face of passive access remedies.

4.3 The benefits of infrastructure competition

- 4.3.1 This section presents academic and empirical evidence that supports the significant additional benefits arising from infrastructure competition, relative to the benefits available for service competition only. We also present evidence on the impact of service development and quality of service outcomes in markets characterised by infrastructure competition compared to service competition

Defining infrastructure competition

- 4.3.2 In the DCR, it is vital that Ofcom are clear on defining the different levels of competition within the market. In particular, the IIG note that the term 'infrastructure competition' appears to be used when referring to competition based on passive access to BT's infrastructure. Although 'end-to-end competition' refers to competition between competing infrastructures, it is crucially important to ensure that the distinction between competition based on regulated passive access and competition based on network infrastructure investment is clear to all.
- 4.3.3 The IIG has set out in both this response and its response to the recent BCMR consultation the importance of maintaining incentives to ensure continued network build; this brings superior competitive benefits than competition based on regulated passive access. Suggesting that access-based competition is infrastructure competition therefore associates a higher level of benefits that could be available under this style of competition that would in reality be realisable.
- 4.3.4 Competition based on dark fibre, for example, is still subject to the network topology and the quality of service performance of the access provider. BT's local access network is

typically constructed based on the ‘tree and branch’ design associated with the historical structure of BT exchanges deployed for voice PSTN. Therefore, if passive access is provided by BT only, CPs will be denied the innovation that can come from high capacity modern infrastructure based on rings and point to point fibre. Even access to duct would still tie providers to the access provider’s network topology.

- 4.3.5 If infrastructure investment is redefined as meaning investment in electronics only (as implied by Ofcom’s new terminology) then there will be no incentive for alternative providers to invest in modern infrastructure and therefore little or no renewal of the physical infrastructure. As a result, the UK may find itself unable to meet the needs of residential and business consumers within the period of this strategic review.
- 4.3.6 Ofcom present a forecast of speed requirements by the Broadband Stakeholder Group (BSG), which suggests that a heavy use family of four would need a minimum of 30Mbit/s by 2023, as an indication of what their regulatory strategy needs to deliver. The IIG does not agree with this as a reasonable target and consider that it shows considerable lack of ambition and vision. Ofcom should not be prescriptive in setting speed targets, rather they should ensure that their long term strategy facilitates investment in infrastructure that allows consumers to be able to access internet connections at a bandwidth that they demand. The IIG considers it wrong to propose a speed to be “achieved” by the end of the review period, but would note that even today 1Gbit/s access is already available through CityFibre’s joint venture with Sky and TT in York, and Virgin Media customers can get 200Mbit/s across their HFC network.
- 4.3.7 Further, Ofcom need to consider the emergence of open access wholesale network providers, competing directly with BT Openreach. As these providers do not operate as a vertically integrated provider of retail services, they appear to not be covered by Ofcom’s new definitions.
- 4.3.8 ***Research uses the term infrastructure competition referring to physically separate networks, not to passive access to the incumbent’s network. All analysis in this response should therefore be read as such – that is – the term infrastructure in this response is equivalent to Ofcom’s term end-to-end competition. The IIG does not recognise the use of a separate term for competition based on passive access.***
- 4.3.9 The IIG is concerned at Ofcom’s proposed new terminology as it suggests a preconception of substantially increased benefits from moving from the use of active access to the use of passive access. The IIG does not dispute that some short-term marginal benefits may be derived from the use of passive access, but contests that the magnitude of any such incremental benefits would be significant, and certainly not at a level that would justify likening the use of passive access to the presence of true physical infrastructure competition.

Academic evidence

- 4.3.10 The advantages of infrastructure competition between independent providers over service-level competition (where Communications Providers access the network provided by a dominant owner of an essential input) have long been recognised by academic and other researchers.

- 4.3.11 Many academic studies have explored the relative benefits of infrastructure-, or facilities-, based competition compared with service-based entry. For example, as Glen Woroch explained in 1998: "... entry by facilities based competitors ... is seen as a particularly effective means to support the efficient capital investment and adoption of advanced technologies."² Woroch also says that "vigorous competition among network owners is also believed to safeguard consumers against incumbents' attempts to extend their monopoly power into adjacent markets"³. This is an important benefit of infrastructure competition where the incumbent operator has SMP in the upstream, wholesale market.
- 4.3.12 More recently, Johannes Bauer suggests that the benefits of infrastructure competition include innovation and investment "as well as the associated longer term user benefits"⁴. Similarly Martin Cave suggests that an over-reliance on service-based competition would deny consumers the benefits of infrastructure competition⁵.
- 4.3.13 One of the key features of any market where a vertically integrated firm is dominant upstream but faces competition downstream is that the firm can leverage its dominance into the downstream market, as suggested by Woroch. The presence of independent competition makes this much more difficult, if not impossible. A major contributing factor to BT's investment in its own infrastructure has been the development of large-scale infrastructure competition, via cable network investment, now operated by Virgin Media. In a 2012 paper, Nardotto, Valletti and Verboven⁶ use data sets for the UK on broadband penetration and speeds to analyse the impact of inter-platform competition (cable networks vs. traditional telecoms providers) and intra-platform competition (whereby entrants access BT's network). They find that intra-platform competition through LLU entry has not significantly raised total broadband penetration. In contrast, inter-platform competition (between networks) has had a more significant impact and "always leads to market expansion".⁷ *LLU has had a positive impact on the quality of service provided, but infrastructure competition has a positive impact on both penetration and quality.* This is a further reason why competition based on passive access should not be referred to as infrastructure competition.
- 4.3.14 Similarly, Bouckaert, van Dijk and Verboven (2010)⁸ analysed the effects in the broadband market of, what they referred to as: a) inter-platform (facilities-based or infrastructure) competition; b) facilities-based intra-platform (LLU) competition; and c) service-based intra-platform competition. Using a sample of OECD countries, they found that inter-platform competition has been the main driver of broadband penetration and that the two types of

² Woroch, G. 'Facilities Competition and Local Network Investment: Theory, Evidence and Policy Implications' in *Industrial and Corporate Change* Vol. 7 No. 4 1998 pp601 - 614

³ op cit, footnote 11

⁴ Bauer, J. 'Regulation, Public Policy and investment in communications infrastructure' in *Telecommunications Policy* Vol. 34, 2010 pp. 65 - 79

⁵ Cave, M. 'Encouraging infrastructure competition via the ladder of investment' in *Telecommunications Policy* Vol. 30, 2006 pp223 - 237

⁶ Mattia Nardotto, Tommaso Valletti and Frank Verboven; *Unbundling the Incumbent: Evidence from UK Broadband*. Centre for Economic Policy Research, Discussion Paper No. 914, October 2012.

⁷ op cit, p.28

⁸ Jan Bouckaert, Theon van Dijk, Frank Verboven; *Access regulation, competition, and broadband penetration: An international study*. *Telecommunications Policy* 34 (2010) pp 661 – 671.

intra-platform competition have a “considerably smaller effect on the broadband penetration”.

- 4.3.15 The final two papers cited above refer to competition between the incumbent’s copper and the entrant’s cable network. However, there is no reason to think that these findings would not apply to different networks of the same type, i.e. between independent fibre networks. The benefits come from independent entities competing to provide broadband products to customers. How this is achieved from a technical standpoint is not important. *What is important is that independent rivals can compete across all levels of the value chain including, for example, network design and topology.*

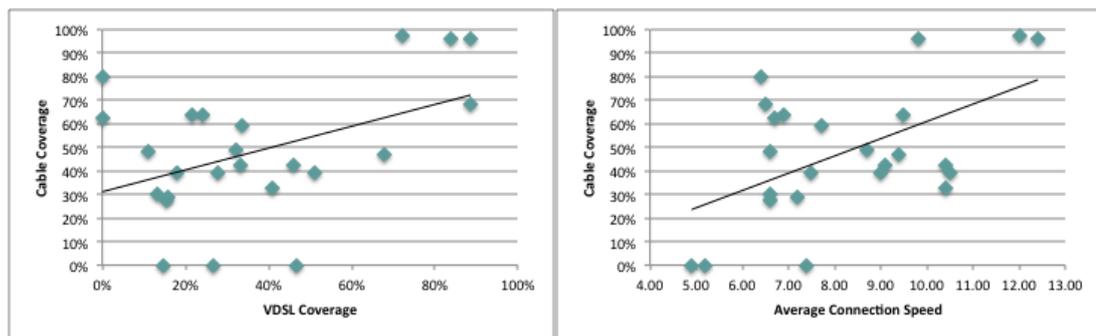
Empirical evidence

- 4.3.16 Empirical evidence of the positive effects of competition between independent networks can most clearly be illustrated using data from broadband markets where competition is between copper and cable. However, again, it is our view that these lessons apply equally to business services offered on the same network type but by different operators. In essence, where there is competition between different networks, whether they use the same technology or not, then customer outcomes are superior to where competitors all use the same network. The networks compete to offer better service levels than their rivals and whether one is copper and one is cable, or both are fibre, is not important.
- 4.3.17 Another significant advantage of infrastructure competition over service-level competition is that it causes the incumbent to invest and innovate at the deepest level of its network. The use of passive access remedies gives competitors the opportunity to compete in providing the active elements of the network, but does not provide competition at the physical infrastructure level. Further, price controlled passive access restricts the return available on investments either by the regulated incumbent or by challengers. Therefore the competitive pressures to expand infrastructure to more premises and to improve the efficiency of infrastructure build are significantly reduced.

Infrastructure competition and product benefits

- 4.3.18 The positive effect on consumer outcomes of competition between independent service providers is most clearly seen in the European broadband markets. Figure 1 illustrates a strong correlation between the presence of cable infrastructure and both the presence of VDSL and increased broadband access speeds. The left hand panel shows the correlation between cable and VDSL coverage and the right hand panel between cable coverage and average connection speed. The markers in each graph represent different European countries.

Figure 1: Correlations between Cable and Speed and Cable and DSL



Source: European Commission⁹, Akamai, SPC Network

4.3.19 Investment in VDSL is positively associated with the presence of cable networks. The right hand panel shows an even stronger correlation between the coverage of cable and the average connection speed enjoyed by consumers. The two countries with the highest broadband access speeds in Europe (the Netherlands and Switzerland) also have nearly 100% cable and over 70% DSL coverage. As always it should be remembered that correlation does not mean a cause and effect, but it is clear that two technologies from separate firms tend to go together and access speeds are higher where cable is present. A reasonable interpretation of this correlation is that investors in cable and VDSL have responded to the presence of each other through investing more in their own technology.

4.3.20 Such an interpretation is supported by the findings of a report by Bain & Company in 2009, which noted:

In European markets where a second wireline access infrastructure is widely available (most frequently cable in residential households), telecom and cable operators are increasingly competing in one another's traditional markets. This competition is also spurring momentum for the upgrade of wireline networks, pushing them to provide higher broadband speeds. In countries such as the Netherlands, Belgium and Switzerland which have two competing fixed infrastructures covering more than 80 per cent of the population, consumers already experience higher average broadband speeds of 5.3 Mbit/s compared with 4.0 Mbit/s in other Western European markets. In addition, in these three countries broadband penetration is at 32 per cent of the population compared with 25 per cent in other Western European countries.¹⁰

4.3.21 This comment is at least as true today as it was in 2009, although the average speeds and household broadband penetration are substantially higher today.

Infrastructure Competition and Quality of Service

4.3.22 Infrastructure competition allows for substantially different quality of service (QOS) performance between platforms. If all CPs used the same network then they would all have similar QOS levels simply because the underlying network is the same. Where there are competing networks then the network providers can offer different service levels.

⁹ European Commission 'Broadband Coverage in Europe 2013' Prepared by IHS Ltd and VVA Consulting

¹⁰ Bain & Company 'Next Generation Competition: Driving Innovation in Telecommunications' (2009). Prepared for Liberty Global.

- 4.3.23 Ofcom complaints data illustrates the difference in quality offered by different networks. The data shows that Virgin Media, which does not use the BT network, has been consistently the best performing broadband supplier with complaints per 1,000 customers some one third of the industry average¹¹. Service providers using the BT network are to some extent limited by the QOS offered by BT Openreach. However, an independent competitor is able to offer substantially different quality of service because it is not dependent on BT: a feature that would be the same regardless of the network type involved.
- 4.3.24 Additionally, the existence of alternative infrastructures with a high fibre count and modern architecture design, offers products and quality of service differentiation that BT alone cannot provide.

Conclusions on the advantages of infrastructure competition over service competition

- 4.3.25 From the studies shown, it is clear that the competition benefits derived from independent access infrastructure providers competing with BT of their own accord would be superior to service-level competition alone, even if that service-level competition reached as deep as the access to BT's dark fibre network. Without the incentive to invest in its physical access network infrastructure, dark fibre access would provide no incentive to BT to expand its network as service competition would only be present in the areas where BT's network already reaches.
- 4.3.26 The crux of this argument is that whilst infrastructure competition leads to significantly improved outcomes for consumers, it requires that alternative providers make the decision to invest and actually build competing networks.

¹¹ Ofcom Telecoms Complaints Data published 30 June 2015. Virgin Media had fewest broadband complaints of any reported CP per 1000 customers for 7 of 9 quarters between Q1 2013 and Q1 2015.

5 How regulatory decisions influence investment

Background

- 5.1.1 There is nothing inevitable about investment in fibre networks. Large international investors, such as Liberty Global, Zayo and euNetworks are able to invest in countries that most support independent infrastructure competition. Our concern is to ensure that the UK is an investment destination of choice for such firms and that effective competition between independent infrastructure providers delivers benefits to customers, citizens and the UK economy.
- 5.1.2 Stability, transparency and predictability of regulation is of paramount importance for investors. The introduction of major change can cause long delays and lasting radical changes to the investor attractiveness of the market.
- 5.1.3 Ofcom have recently imposed the VULA remedy on BT, acknowledging the risks BT is incurring in rolling out its fibre to the cabinet (FTTC) network to offer super-fast broadband services.
- 5.1.4 Atypically from many other European countries, however, BT has chosen to not roll out a FTTH/P network, focusing instead on FTTC using existing copper connection for the final connection to houses and premises. This has resulted in the UK having good availability of super-fast broadband, however, this approach has significant limitations in regard to supporting ultra-fast connectivity. Infrastructure competitors to BT, including IIG members, are investing in more fibre rich networks that deliver more capable infrastructures that naturally support ultrafast. This not only increases choice to consumers, but creates an incentive and need for BT to invest in further evolutions of its network. .
- 5.1.5 BT's chosen network strategy has created the opportunity for other CPs to invest in and build fibre-based access networks serving both private residential and business customers as well as providing wholesale access to other CPs.
- 5.1.6 Some CPs operate as vertically integrated providers (of which some also offer wholesale access to their networks) whilst others (e.g. CityFibre) build wholesale only open access networks which they offer to other CPs at prices that are competitive with BT's wholesale prices.
- 5.1.7 Where investment is made in competing access infrastructure, the competitive dynamics change significantly from the situation where service-based CPs can only compete based on access to BT's wholesale services. Existing and planned investment in competing access networks is creating competition in cities, towns and even large villages across the UK.
- 5.1.8 The investment in and roll out of fibre access networks cause fundamental changes to the economic prospects of the business communities and the public sector as described in "The

tale of two Gigabit cities”¹² which describes the changes the fibre access networks have caused in Coventry and York, where CityFibre has rolled out its fibre access network. Other examples of Virgin Media’s investment in Manchester, Nottingham and Leeds also speak of the economic and social benefits the fibre infrastructure can deliver¹³.

The impact of Ofcom’s decisions

- 5.1.9 To encourage investment in network and services, the IIG believes that Ofcom must recognise evidence of contestability and future contestability to ensure that infrastructure investment is encouraged unless it is proven not to be feasible. In the recent past it would appear that Ofcom have adopted the opposite presumption, namely that investment in alternative infrastructure is not feasible, unless proven so.
- 5.1.10 The concept of enduring bottlenecks is an underlying principle used by Ofcom to determine whether and how to regulate specific markets. Recent experience has shown that some markets which were considered enduring bottlenecks only 5-7 years ago are now clearly contestable and subject to market entry and increasing competition.
- 5.1.11 The designation of a market as an enduring bottleneck has historically meant heavy-handed access and price regulation to enable access-based competition (in layer 2). Such regulation causes significant harm to potential investment and should therefore be a last resort rather than a default position. Ofcom’s forward-looking strategy must therefore be evidence based, regulating enduring bottlenecks only when it can be proven to exist and when future developments are unlikely to change that situation.
- 5.1.12 When reviewing how Ofcom’s decisions impact on investment incentives, it is necessary to look at the full hierarchy of decisions, not just the final headline outcomes.
- 5.1.13 For example, the impact of a decision on price regulation is not just the actual level of price changes required, but the underlying decisions on how, where and why the regulation is applied. It is therefore important to consider at least three levels:
- The definition of the product market covered,
 - The definition of the geographic market covered, and
 - The criteria used to determine whether the market is competitive or be subject to regulatory intervention.
- 5.1.14 Whilst Ofcom are to a certain extent bound by the EC framework regulations in these matters, they still retain substantial discretion to decide on these parameters.

¹² <https://broadbandworldforum.wordpress.com/2015/08/19/a-tale-of-two-gigabit-cities-coventry-and-york/>

¹³ Nottingham - <http://about.virginmedia.com/press-release/9477/50000-nottingham-homes-and-businesses-to-get-ultrafast-internet-boost-from-virgin-media>
Manchester - <http://about.virginmedia.com/press-release/9473/manchester-first-city-to-benefit-from-3bn-ultrafast-rollout> , Leeds <http://about.virginmedia.com/press-release/9475/leeds-city-council-secures-40m-ultrafast-internet-boost-for-80000-homes-and-businesses>

5.1.15 Transparency, consistency and predictability are paramount in creating a pro-investment market. The absence of one or more of these results in a significant increase in regulatory risk and presents a direct disincentive to investment.

Ofcom's recent BCMR proposals

5.1.16 Despite Ofcom's aggressive regulation of BT's wholesale Ethernet pricing, several CPs have managed to establish successful businesses that have attracted substantial private funding. It is, however, critical that Ofcom does not regulate BT's prices below the level where efficient network providers can remain attractive for private investors. Our analysis indicates that BT's current price levels are close to those of an effective competitor in a multi-provider market.

5.1.17 Proposals from Ofcom to impose further aggressive wholesale Ethernet price reductions on BT and to mandate the provision of dark fibre access at extremely low prices, would most likely undermine the incentives of the competitive infrastructure CPs to pursue their planned investments, simply because it will not be possible to raise the necessary funding.

5.1.18 Ofcom's proposals for pricing of active and passive wholesale services under the BCMR review currently under way, are examples of regulatory decisions that would likely cause a significant reduction in competitive infrastructure investment. The cost level required to support pricing at the proposed level could only be achieved by an operator with extremely high market share (due to the very high economies of scale present in fixed networks). It would therefore not be viable for efficient investors in modern access networks to compete with BT's regulated Ethernet prices.

5.1.19 Further, Ofcom's lack of recognition of where competition has already emerged and where it is likely to emerge during the period of the BCMR review (reflected in how they have defined both product and geographic markets), means that Ofcom is applying extremely aggressive price regulation to products and in geographies where competition is already starting to make its mark. This is a direct disincentive for competing CPs to invest in towns and cities around the country.

5.1.20 It is not surprising that competition is not developing evenly across all products and the entire geography of the UK, so regulatory decisions must take into account the more granular market characteristics.

5.1.21 Additionally, Ofcom have changed their criteria for defining separate geographic markets, without providing a rationale or justification for this. This indicates a regulatory regime that is erratic and lacks transparency which therefore presents a risk to investors.

5.1.22 [✂]

5.1.23 The IIG considers Ofcom's proposals in the BCMR consultations to be based on flawed analysis and a presumption against viable and efficient infrastructure competition.

Where to apply public policy action

- 5.1.24 The IIG understands that there are some geographic markets where the development of competition is very unlikely to be viable (barring the development of new low-cost technologies) where public policy action may be required to the benefit of consumers and citizens.
- 5.1.25 It is, however, equally important that such action is implemented in a targeted manner so as to not endanger the roll-out of competing networks which can deliver superior results for the large proportion of UK citizens.
- 5.1.26 It is also important to understand that areas that were considered enduring bottlenecks only a few years ago – such as the fixed access network in medium-sized towns and cities – are now experiencing investment in competing access infrastructure. The selection of geographic areas in which to apply public policy action must be carefully considered and that any action taken causes the minimum market disruption possible.
- 5.1.27 The DCR must take a longer view than the market reviews (which typically cover a three-year period). There is clear evidence that the investment community is willing to engage in the building of competing access infrastructures and, whilst ensuring that they do not encourage inefficient investment, Ofcom strategy needs to consider the role of efficient investment in competing access infrastructures in the delivery of the networks and services required in 10 years and beyond.
- 5.1.28 It is the view of the IIG that the approach towards identifying enduring bottlenecks needs to be revisited in the light of current and future investment to ensure that such investment is not deterred and the UK has a physical network infrastructure that can deliver the services of the future.

Summary

- 5.1.29 The IIG supports Ofcom's stated strategy to rely on competition where feasible, but disagrees with Ofcom's recent interpretation of this principle. Ofcom should consider that a product or geographic market is contestable (and therefore prospectively competitive) until it is proven not to be.
- 5.1.30 Ofcom's processes and presumptions need to change throughout to embed this new presumption, rather than what appears at present to be a presumption that a market is an enduring bottleneck until this is proven not to be the case.
- 5.1.31 Given that the UK is experiencing substantial investment in new future-proof networks, Ofcom must adopt a strategy to support this investment. With a presumption that markets are contestable, the definition of enduring bottlenecks must be continually reviewed to take into account developments in demand as well in as costs and available technologies to meet that demand.

Defining efficient investment

- 5.1.32 Ofcom has in its recent BCMR consultations indicated that any network provider that cannot replicate BT's cost levels is by definition inefficient. The IIG contests this in the strongest

terms. Digital communications networks are characterised by substantial economies of scale, this is stronger for fixed networks, but present in mobile networks as well.

- 5.1.33 Taken at its extreme, this means that no investment in alternative network infrastructure is efficient, as no network can replicate the scale economies enjoyed by the incumbent monopoly provider.
- 5.1.34 Given the very substantial benefits derived from competition at all levels of the supply chain, this is evidently not a desirable conclusion. Ofcom has a duty to promote effective and efficient competition and it is therefore critical that there is a clear definition of how this can be defined.
- 5.1.35 The IIG contends that efficient competition should be defined as the level of efficiency that could be achieved in a competitive market. *The term 'efficient competition' becomes meaningless if the level of efficiency expected can only be achieved in a market without competition.*
- 5.1.36 Decisions by Ofcom to set regulated prices at a level that could not be achieved in a competitive market are a direct disincentive to competition. It is the IIGs position that Ofcom would be in breach of its duties, were it to define efficient investment in at a level that could not be achieved in a competitive market.

6 Competition model for the future

- 6.1.1 In section 9 of the DCR, Ofcom discuss the relative pros and cons of different competition models going forward in the UK digital communications markets. Below we present the IIG's views on Ofcom's questions and on the topic in general.
- 6.1.2 In this section Ofcom use the term 'infrastructure competition' with reference to competition based on access to passive remedies. As presented earlier in this response, the IIG disagrees fundamentally with the application of the term infrastructure competition to a form of competition that relies on access to the incumbent's network.
- 6.1.3 To remove subjectivity and presumptions in the terminology used, the IIG proposes that Ofcom consider the use of the technical terminology of Layer 1, 2 and 3; with Layer 1 being physical infrastructure Layer 2 being electronics and layer 3 being services. If Ofcom used this structure for the DCR with the aim of ensuring efficient competition and investment in each layer, then the regulatory structures and arguments could be simplified substantially.
- 6.1.4 The IIG agrees with Ofcom's goal of achieving 'efficient investment and effective competition'. We do not, however agree with several of the statements made by Ofcom in this section and below we highlight some of these.

The roles of upstream and downstream competition

Static efficiency

- 6.1.5 Ofcom, correctly, states that end-to-end competition exposes the whole value chain to competition and thus encourages efficiency in structure and operation of networks¹⁴. Ofcom then, however, proceed to state that as ‘duplication of assets’ increases average costs and therefore access based competition may have a higher level of static efficiency than true infrastructure competition.
- 6.1.6 Here Ofcom appear to be of the misconception that investors in new future-proof networks are simply ‘duplicating assets’ when in fact the networks being constructed are of a different design and topology and are designed to deliver ultra-high speed connectivity to businesses and residential premises and homes. BT’s network could not replicate the functionality of these new networks and it is a flaw in Ofcom’s analysis to consider it as a simple duplication of assets.
- 6.1.7 When analysing static efficiency in the context of the strategic review, Ofcom need to anticipate the demand that needs to be satisfied in 5 to 10 years and how these are satisfied most efficiently. As BT’s copper network will almost certainly not be able to satisfy the needs forecast for that period, the network currently being built by competitors to BT will be the most efficient.

Dynamic efficiency

- 6.1.8 Ofcom recognise that dynamic efficiency incentives will be reduced is cost-based access remedies are applied, which do not sufficiently reward the investment risk taken¹⁵. However Ofcom appear to consider that this risk can be substantially mitigated by the imposition of passive remedies (especially duct and pole access) as this type of access may produce nearly the same levels of dynamic benefits as true infrastructure competition¹⁶.
- 6.1.9 The IIG fundamentally disagrees with the assumption that passive access remedies can replicate the dynamic benefits that arise from true infrastructure competition, whether as vertically integrated end-to-end providers or as open access wholesale platforms.
- 6.1.10 Dynamic benefits from true infrastructure competition include not only any improved services an access seeker could possibly provide using passive access, but the benefits from improved network topologies and technologies as well as improved network performance and quality of service resulting from competing network providers’ effort to attract retail and wholesale customers.

Light touch regulation

- 6.1.11 Ofcom have applied a lighter touch regulation approach to markets where BT has been making investment in new and more risky functionality. An example of the lighter touch approach is the application of the VULA margin squeeze test.

¹⁴ DCR s. 9.16

¹⁵ DCR s.9.21

¹⁶ DCR s9.19

6.1.12 The IIG supports the differentiation in regulatory approach to support investment and innovation, but it is important that Ofcom consider the investment by other parties than BT, when identifying markets that qualify for the lighter touch regulation. The fact that BT has chosen to not invest in future-proof access networks (which are being widely implemented across the EU), should not mean that there should not be incentives and reward for that investment being undertaken by other providers. To reserve investment incentives for BT would be discriminatory and a direct disincentive for CPs to invest in UK digital communications networks.

Summary

6.1.13 The IIG contests Ofcom's suggestion that service competition based on passive remedies can replicate the static or dynamic benefits of true infrastructure competition. This approach appears short-term at the cost of continued investment in fit-for-purpose networks that can support and deliver the digital economy to business and residential consumers and citizens in general.

6.1.14 Ofcom's focus should be on promoting efficient competition at all levels rather than unduly focusing on short-term impact through access based competition. Presumptions of enduring bottlenecks risk the UK not benefitting from investment that is taking other leading economies forward to support the digital economy and retain the country's competitiveness internationally.

The role of active and passive remedies

Passive remedies

6.1.15 In the recent BCMR consultation and in the DCR discussion document, Ofcom devote a considerable amount of attention to the possible use of passive access remedies, in places even suggesting these as a substitute for direct investment in alternative networks.

6.1.16 Whilst passive access products may be attractive to some CPs, it is important to understand the likely impact of mandating passive access on the continued investment in modern network infrastructure.

6.1.17 The impact on investment incentives need to be considered both with regards to BT's position and with regards to the position of competing CPs investing in alternative infrastructure.

6.1.18 Competing CPs are already today offering access to dark fibre products in London and increasingly also in other parts of the UK. If investment incentives are not reduced from current levels (e.g. through mandating very low active and passive wholesale prices for BT), then it is likely that dark fibre products will be available across a large number of towns and cities in the UK within the next 5 – 10 years.

6.1.19 Imposing the obligation for BT to offer passive access products at prices set at the level suggested in the recent BCMR consultation would almost certainly reduce the future investment by competing CPs considerably. As a result some CPs may completely stop investing and there may be considerable consolidation and market exit as a result.

- 6.1.20 For BT, the main investment and innovation incentive arises from the presence of competing networks. As set out in 4 of this response, several studies have proven that there is a clear correlation between the presence of competing access networks and incumbent investment in super and ultrafast interconnection services.
- 6.1.21 As the introduction of low-priced passive access is likely to result in a sharp reduction in investment by competitive CPs, this will also substantially reduce the pressure and incentive on BT to keep investing and innovating.
- 6.1.22 The result of the introduction of low-priced passive access is therefore likely to be a sharp reduction in infrastructure investment in the UK, from both BT and competitive CPs. This would leave the UK, which is already lagging behind other leading economies in high-speed network investment, stranded with infrastructure that is not fit-for-purpose and which cannot support the digital economy.
- 6.1.23 The IIG questions the need to mandate regulated passive access remedies. It is very possible that, as BT faces increased competition from other CPs offering dark fibre services, it will itself choose to offer dark fibre. This process would retain the investment incentives for all parties and the market would benefit from true infrastructure competition.
- 6.1.24 Ofcom should also be cognisant that its strategy does not need to address issues that are being addressed separately. An example of this is the Civil Infrastructure Directive (CID), which is due for transposition in the UK in 2016.
- 6.1.25 The IIG considers that the risks of imposing low-priced passive access remedies outweigh the potential short term benefits to downstream competition by a considerable factor and we encourage Ofcom to consider the mandating of passive remedies very carefully. Should Ofcom decide to proceed with passive remedies, then it is critical that to ensure that the price level established does not endanger the continued growth of competitive access networks throughout the country.

Active remedies

- 6.1.26 The IIG acknowledge the importance of downstream competition and the benefits this type of competition can deliver to consumers (including businesses) and citizens. Indeed, the IIG members offer wholesale services to other CPs in the fixed market as well as to Mobile Network Operators (MNOs).
- 6.1.27 As the degree of competition increases in the wholesale markets, it would be appropriate for Ofcom to gradually reduce the level of intrusiveness of active remedies imposed. For example, a VULA-style obligation combined with an obligation to offer the same terms and conditions (including prices) nationally, could transfer the benefits of competition to areas which are not yet experiencing competition.

Summary

- 6.1.28 The IIG considers that Ofcom should design their future strategy and policies to target long-term sustainable competition at the deepest level possible in the network.

- 6.1.29 The level in the network where competition is feasible is not static, demand and technology changes the cost and revenue profiles constantly and Ofcom must ensure that their policies do not pre-judge that large parts of the country will remain unattractive as investment prospects and should therefore refrain from regulatory measures that consolidate BT's market power and deter competition.
- 6.1.30 The market for passive access is developing commercially and Ofcom should exercise the utmost caution in implementing regulatory access remedies. The viability of ongoing infrastructure investment is extremely sensitive to the pricing of passive remedies. Aggressive pricing of passive remedies could deliver limited short term benefits at the cost of substantial long-term sustainable infrastructure, and the substantial associated benefits.
- 6.1.31 The requirements for active remedies is likely to remain, but over time the growing competition at the wholesale layer may make it possible for Ofcom to retire specific regulations and replace them with non-discrimination provisions and possibly an obligation to offer national wholesale terms.