Towerhouse LLP

Implementing passive access in the UK

A report prepared for the Passive Access Group

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Towerhouse LLP

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1. Executive summary

1.1 This report considers how easy it would be to introduce dark fibre or duct access[1] in the UK as part of Ofcom's review of business connectivity markets. It concludes that the challenges of introducing dark fibre and duct access are easily surmountable.

1.2 The companies who have commissioned this report (who have formed the 'Passive Access Group' ('PAG')) believe wider use of passive access could transform the way we supply fixed communications services, bringing significant benefits to UK consumers. Passive access is particularly effective in enabling new business services and functionality, which can fuel economic growth, help boost employment and enable prosperity. Markets with passive remedies which promote investment deeper in the network, or with competing infrastructure-based networks, lead to opportunities for service differentiation and rollout of services to unserved areas, with clear benefits for business customers – they do not simply result in attempts to replicate incumbent services based on perceived arbitrage opportunities.

1.3 This report reviews the implementation challenges that have been identified by Ofcom in relation to passive remedies in business connectivity markets. It draws from past industry experience in the UK and the experience of other countries that have implemented passive remedies. To assist Ofcom, the PAG has also commissioned an accompanying Report prepared by Frontier Economics on the economic policy questions raised by passive access.

1.4 This report firstly deals with Ofcom's concerns about **demand for passive remedies**. Our key conclusions are that:

(a) **duct and dark fibre are complementary remedies and there is likely to be demand for both in different scenarios**. Consistent with Ofcom's approach with other remedies and the common regulatory framework, concurrent regulation of duct and dark fibre is likely to create the best environment to promote effective competition;

(b) **Ofcom's shift away from requiring evidence of demand for passive remedies is the correct approach**. Suggestions that CPs should 'persuade' Ofcom that their businesses cases for using passive remedies are realistic are misguided – the benefits of innovation cannot be straightforwardly identified in advance;

(c) **passive remedies should be implemented with a broad scope**. Ofcom appears concerned that it will need to impose limitations on how passive remedies may be used, and this may impact demand or the benefits of such remedies. In our view, restrictive limitations on how passive remedies can be used are generally unnecessary and inappropriate and constrain CPs to replicating existing market structures. Fewer constraints are likely to lead to a more positive competitive outcome; and

[1] In this report we use the term "duct" to refer to all the civil infrastructure used to support the distribution of telecommunications cables including duct, poles, footway boxes and chambers.

(d) **the EU Civil Infrastructure Directive does not replace the need for a duct access remedy.** The Directive was intended to encourage rollout of next generation networks but it was not intended to, and is not likely to, address the existence of SMP.

1.5 This report then deals with Ofcom's concerns about **specific implementation challenges**. Our key conclusions are that:

(a) **limitations on the remedy can be enforced**. While we do not agree that limitations are appropriate (particularly usage limitations), there is no evidence that BT would not be able to enforce limitations on where passive remedies are used;

(b) **Ofcom has a range of options available to address (i) the non-discrimination model that should apply to BT; (ii) arrangements for new infrastructure; (iii) the appropriate implementation period; and (iv) how BT's development and implementation costs will be covered.** It is outside the scope of this report to come to a definitive view on how Ofcom should proceed in relation to these issues. However, the report concludes that based on the UK experience dealing with similar questions and the past experiences of other countries that have implemented passive remedies, implementation of passive remedies does not need to be complicated. Accordingly, the mere existence of these implementation challenges should not inhibit implementation of passive remedies in the UK.

1.6 **Our overall conclusion is that passive access is a desirable option for the UK, that it offers the potential for significant innovation and more effective competition, and that the implementation challenges can be overcome**. Similar challenges have been overcome before in the UK in relation to a sequence of previous, very similar concerns raised as telecoms competition has developed. And other countries, including other European Member States, have already overcome these challenges in relation to passive access specifically.

2. What is 'passive access' and why does it matter?

Broadband competition in the fibre world

2.1 Broadband has transformed the way we use telecommunications, at work and in our personal lives. The first wave of broadband services in the early 2000s brought the notion of the 'always-on' internet to millions of homes and businesses. Competition meant that a myriad of ways to access the internet, over wires and radio waves, are now available to us wherever we live or work. The way we play, chat, gather, agitate, protest, share and shop has changed forever.

2.2 But of course, we want more. With demand for bandwidth growing, and technical limits on the services that can be delivered over the legacy copper network, much focus in the past few years has been on the deployment of fibre access services.[2]

2.3 Competition in fixed-line consumer telecommunications services requires open access to the only ubiquitous national access network – that operated by BT, the incumbent operator. When introducing competition in voice calls and copper-based broadband services, Oftel and Ofcom began by requiring open access by interconnecting networks – that is, requiring BT to operate an active connection between rival's networks and rival's customers' premises (eg, WLR or IPStream).

2.4 This approach of offering active access was replicated for the new optic fibre connections now being installed by BT. Thus, competition in fibre broadband services involves rival retail broadband services supplied using wholesale use of a fibre link that remains under BT's control.

2.5 Starting in 2010, Ofcom has begun regulating new passive remedies to support superfast broadband competition to homes and small businesses. That has meant that access to BT's ducts and poles – 'passive' assets, just like BT's copper loops – has been available for the first time, at least on a limited basis in connection with the access portion of NGAs.[3] However, the ability of other CPs to use these new remedies has been significantly dampened by factors such as:

(a) the lack of specific price regulation to give the CPs upfront certainty they need to develop a viable business plan;

(b) limitations on the remedy that have been narrowly interpreted by BT, stymying possible new innovations in the market; and

(c) perhaps most importantly, the lack of solutions for backhaul connectivity in the non-local segment of any NGA.

[2] See Department for Culture, Media and Sport, *Broadband Delivery UK* (13 November 2014) at https://www.gov.uk/broadband-delivery-uk.

[3] Ofcom, *Review of the Wholesale Local Access Market* (7 October 2010) ('2010 WLA Statement') pp 122–3.

The status quo in business connectivity

2.6 Alongside competition in residential broadband, Ofcom (and before it Oftel) have worked to bring the benefits of competition to larger business customers. The services that organisations need are different to the services demanded by homes and small businesses. Typically, the service such an organisation needs is a network, not a single-site connection – for example, to connect a chain of supermarkets or shops, or different offices of a national accounting or law firm. Compared to residential services, these networks can vary much more in their size, their scale and scope and the extent to which they are maintained and managed. Many of the data services offered to these customers are open and contestable, but one element remains largely a monopoly, in most circumstances: the connection linking each site to the central network 'hub'. Just as with other telecommunications services, only one network – the BT network – can supply these connections on a national basis. Therefore, fair competition for enterprise customers requires open access to the ability to connect business sites with data networks (termed 'business connectivity').

2.7 At the same time, business connectivity services are essential for operators to build their own networks, including to service residential customers with fixed access and wireless solutions. Accordingly, business connectivity services do not just benefit businesses – these services are essential to delivering services to all consumers across the UK.

2.8 In the early days of competition in business connectivity, circuits were made available on a resale basis.[4] As with voice services, the benefits of resale competition were limited. Oftel saw it as important to develop a form of network interconnection that enabled competition between networks offering business connectivity.[5]

2.9 Accordingly, a form of network interconnection (known as 'partial private circuits' or 'PPCs') was developed by Oftel. PPCs enabled conventional circuits to be established and sold by competitors but left BT to decide how to deliver each service.[6]

2.10 Over time, new technology in data networks (Ethernet) has been offered alongside conventional circuits and is gradually replacing older forms of business connectivity. Ethernet has made the deployment of business connectivity better, faster, cheaper and easier.

2.11 At the same time, demand for mobile services in particular has grown and grown, and home broadband services are now essential. The need to support backhaul for new high-speed fixed (optic fibre) and mobile (4G and beyond) mobile networks has increased the risk that a lack of competition in business connectivity can affect competition across a range of services.

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[4] See *Direction under Condition 45.2 of the Public Telecommunications Licence granted to British Telecommunications Plc and under Regulations 6(3) and 6(4) of the Telecommunications (Interconnection) Regulations 1997* (29 March 2001).

[5] Oftel, *National Leased Lines - Statement and Draft Direction Issued by the Director General of Telecommunications* (December 2000).

[6] Ibid at [2.17] ('the term and conditions on which BT must offer part leased lines will not be specified by Oftel in advance but will be left to BT to set in negotiation with the operators within the framework provided by the [Interconnection Directive]').

2.12 As noted above, in relation to fixed backhaul to support consumer broadband services, Ofcom has already introduced passive access, in the form of 'physical infrastructure access' ('PIA').[7]

2.13 PIA was introduced because Ofcom recognised that passive access could provide a better and more flexible form of network access: one that would let rivals invest in their own fibre links, opening up more aspects of service to direct competition for the first time, with a view to putting 'BT's competitors on a similar footing to BT'.[8]

2.14 However, it has since become clear that the restrictions on the PIA remedy were mean it could not put competitors on a similar footing to BT – since, for example, it did not address BT's advantage in the non-local network segments. This had significant consequences for competitors' ability to rollout NGA networks, with CPs pulling out of the BDUK process, in part on the basis that:

> *the uncertainty around the terms and pricing for PIA, and the heavy restrictions as to what we can use it for means that, in our view, this market is not contestable*.[9]

2.15 It was also apparent from the outset that the benefits of passive access using PIA or dark fibre could be important in supporting competition in mobile services and services offered to businesses, but that Ofcom did not consider it appropriate to assess these use cases in the context of the wholesale local access market review. However, Ofcom committed to reviewing the case for PIA to be used for leased lines in the context of business connectivity.[10]

2.16 Ofcom considered this issue in its last review of the business connectivity market. In that review Ofcom declined to impose passive remedies, including because:

(a) it was not convinced that competition issues would be better addressed by including passive remedies, as opposed to solely active remedies;

(b) it saw 'no evidence that any CPs would invest substantially in leased lines infrastructure based on passive remedies'; and

(c) there was insufficient evidence of the benefits to justify the significant regulatory change.[11]

How passive access could change this picture

2.17 Since Ofcom's previous review, there have been a number of relevant developments.

2.18 First, European countries have continued to move towards greater reliance on passive remedies in both local access and business connectivity markets. For example, in October 2014, the Czech Republic telecoms regulator introduced passive remedies. In November 2014, the Federal Council of Switzerland proposed legislative changes to promote access to dark

[7] 2010 WLA Statement.
[8] 2010 WLA Statement, p 100.
[9] Tom Jowitt, 'Geo Lashes out at BT and Quits Broadband Scheme' (TechWeek Europe, 16 November 2011) available at http://www.techweekeurope.co.uk/workspace/geo-lashes-out-at-bt-and-quits-broadband-scheme-46137#pDylaArVshbRGoaJ.
[10] 2010 WLA Statement, p 111–2.
[11] 2013 BCMR Statement, pp 639–40.

fibre. The Swedish regulator had proposed withdrawing passive remedies, but was persuaded to change course, and now intends to notify the EC in early 2015 of its proposed decision to retain duct access obligations on TeliaSonera. There appears to be increasingly clear consensus of the innovation and competition benefits of passive remedies across Europe: and increasing evidence of the benefits in European countries (such as Spain and Portugal) which have already introduced such remedies.

2.19 Secondly, demand for business connectivity solutions continues to grow. For example, growing demand for high-bandwidth services for enterprises and the growth in demand for mobile data services (with their associated backhaul requirements) mean there is likely to be strong appetite for new investment in serving business customers. In this context, responses to Ofcom's *Business Connectivity Market Review – Call for Inputs* (1 April 2014) (the '2014 CFI') demonstrated that stakeholders continue to be interested in passive remedies.

2.20 Thirdly, there has been increasing evidence that the structure of the existing market for business connectivity is failing to meet the needs of significant parts of the UK business market. In particular, there is growing recognition that BT's fibre deployment is leaving 'black spots' in key areas such as business parks, and its product set is failing to provide the solutions that SMEs need.[12] A 2014 study indicated that 'over 80% of private sector employees and businesses are unable to obtain business communications services based on competitive access for anything other than residential style broadband products'.[13] Ofcom's most recent Infrastructure Report acknowledges that the UK market continues to suffer from gaps in fibre coverage that leave a significant proportion of SMEs without superfast broadband.[14]

2.21 The benefits of innovation at a deeper layer in the value chain are well understood. As described elsewhere in this paper, in the case of passive access, these include:

(a) greater opportunities for innovation and product differentiation – for example, by making it easier to deploy bespoke business connectivity services designed for particular customers' needs;

(b) stimulating cost efficiencies and lowering prices for consumers – for example, by facilitating shared deployments in areas such as business parks where existing leased lines are too expensive but existing consumer-level products are inadequate; and

(c) allowing a long-term shift in regulation towards upstream inputs – allowing more levels of the value chain to enjoy the benefits of full competition and a market structure defined by customer demand rather than regulation.

2.22 The type of thriving infrastructure-based competition that has been able to develop on a commercial basis in central London, and has developed on a more widespread basis in other countries in countries that have implemented passive remedies by virtue of regulatory intervention, demonstrates that (when pricing incentives are set appropriately) CPs do not

[12] Federation of Small Businesses, *The Fourth Utility: Delivering universal broadband connectivity for small businesses across the UK* (July 2014) p 4.
[13] SPC Network, *30 Years After Privatisation: Is the Telecoms Market Working?* (2014) p 2.
[14] Ofcom, *Infrastructure Report 2014* (8 December 2014) p 62.

merely replicate pre-existing services and exploit arbitrage opportunities, but invest to deliver differentiated services that are designed to meet the varying needs of heterogeneous business customers. This contrasts to an approach which assumes a small product catalogue of active services is optimal in serving the UK's broad spectrum of business customers. Passive remedies allow innovation and development of services that are best designed to meet business customers' needs.

2.23 Improving services for business customers will inevitably lead to flow-on benefits for all UK consumers. For example, passive remedies will support the development of mobile networks: facilitating deployment of mobile towers and antennae by making the deployment of mobile backhaul more efficient. This will improve mobile operators' network coverage and capacity, leading to an improved customer experience. Passive remedies will also have significant indirect impacts on UK consumers – for example, improved availability of customised services designed to meet the needs of specific business customers will deliver real value to those customers, enabling them to improve their efficiency and responsiveness, with benefits for their own customers.

2.24 Ofcom is now consulting on questions relating to passive access in business connectivity markets. Its consultation paper, *Business Connectivity Market Review: Preliminary consultation on passive remedies* (5 November 2014) (the '2014 Consultation Paper') acknowledges the potential benefits of passive remedies – in terms of greater scope for innovation and service quality improvements; lower prices from productive efficiency; and the potential to relax or withdraw downstream regulation – but also notes a number of economic and implementation challenges that the remedies would pose.

3. The approach of our study

3.1 This section explains the method we used to undertake our study.

Step 1: Identify the background and implementation challenges

3.2 First, we reviewed the background against which Ofcom has determined to review the case for passive remedies in the UK business connectivity market. This included considering the reasons that led Ofcom to regulate PIA in the wholesale local access market, the reasons why that remedy has not been as successful in terms of take-up as hoped, and the opportunities passive remedies in the business connectivity market will offer for both residential and business customers. We concluded that the opportunities are broadest where duct and dark fibre access are available concurrently, and where these remedies are not subject to usage restrictions that lock CPs into investments that reflect BT's existing product categories and market structures.

3.3 We then reviewed and captured each economic and implementation concern raised by Ofcom in a set of three documents relating to Ofcom's various business connectivity market reviews:

(a) section 8 of the 2013 BCMR Statement. The BCMR 2013 Statement sets out Ofcom's reasons for not adopting passive access in the previous BCMR, which concluded in 2013 and set the rules governing access for the period until 31 March 2016;

(b) the 2014 CFI. This was the first document published by Ofcom to kick-off the current BCMR; and

(c) the 2014 Consultation Paper.

3.4 The output of this analysis is a single consolidated table of all points or issues that have been raised by Ofcom in relation to the introduction of passive remedies in the current phase of policy development.

3.5 We then grouped the individual concerns identified by Ofcom into a more concise list, to avoid duplication and also enable us to identify broad themes and wider issues. This list is set out in Annex A to this Report. We recognise that the list identifies only the broader themes raised by Ofcom. We also appreciate that Ofcom's concerns on each issue, and the relative importance attached to each issue, may have changed as Ofcom's thinking on these issues has developed.

Step 2: Test concerns against relevant evidence

3.6 The economic issues set out in Annex A are addressed in the accompanying Report prepared by Frontier Economics on the economic policy questions raised by passive access. We limited our consideration to the practical and implementation concerns.

3.7 Taking each identified concern in turn, we sought to identify:

(a) evidence from the UK, where a similar or closely analogous issue has arisen in the work of Oftel or Ofcom in other relevant service markets; and

(b) evidence from other countries, where the concern has arisen in relation to passive access in business connectivity markets specifically.

3.8 We used this evidence to:

(a) explain our views that duct and dark fibre access should be regulated concurrently and that they should not be subject to restrictive usage limitations; and

(b) produce a matrix of domestic and international evidence that is matched against the areas where Ofcom is most concerned to understand the impact of passive access.

3.9 The aim was to produce a coherent and methodical picture that provides an evidence base against which Ofcom's concerns can be weighed up in an objective way.

Step 3: Set out the results

3.10 In the rest of this report:

(a) we set out the implementation issues raised by Ofcom as we understand them in **section 4**;

(b) we address concerns about the demand for passive remedies and operators' investment plans and how these relate to how duct and dark fibre remedies should be implemented in the UK in **section 5**;

(c) we deal with the remaining implementation issues flagged by Ofcom in **section 6**; and

(d) we summarize our conclusion in **section 7**.

4. What are the implementation issues associated with passive access?

4.1 So what are the issues that arise in implementing passive access in business connectivity markets in the UK? Ofcom has flagged a number of points, some arising in relation to passive access generally and others that apply to specifically to dark fibre or duct access.

4.2 The first group of concerns we address are those related to demand for passive remedies.

4.3 We firstly address a potential threshold concern, which is **whether duct access and dark fibre are substitutable remedies (Issue 1)** – noting that Ofcom appears to have reached a tentative view that implementation of dark fibre may raise fewer implementation challenges.

4.4 We then address the concern raised by BT about whether there is **sufficient evidence that CPs will make substantive investments** based on passive remedies, to unlock new investment or innovation **(Issue 2)**.

4.5 We then examine some related concerns raised by Ofcom in the 2014 Consultation Paper, that:

(a) **Geographic and usage limitations** may be appropriate to mitigate the risks of passive remedies (including possible detrimental impacts on the prospects for competition) but that this may impact the usefulness of such remedies **(Issue 3)**; and

(b) **The EU Civil Infrastructure Directive may address the need for duct access obligations**. Once transposed into UK law, the Directive will require all operators to grant access to their infrastructure and Ofcom has suggested this may be a substitute for a duct access remedy **(Issue 4)**.

4.6 These questions are dealt with in section 5.

4.7 We then assess a second group of concerns, relating to specific implementation issues that may arise with respect to duct and dark fibre. Ofcom has also raised a number of concerns relating to implementation of these services as follows:

(a) **Usage limits** may be hard to enforce, creating competitive distortions **(Issue 5)**. The same physical areas may encompass competitive markets (i.e. where there is no SMP) and markets where an operator has SMP. If usage cannot be 'policed', then passive access may be used in ways that have an impact on both competitive and SMP markets. As a result, Ofcom has raised the concern that passive remedies in SMP markets could create competitive distortions in other markets.

(b) The **non-discrimination model** needs to be determined: how should BT obtain access to its own network assets that are themselves available as passive access services **(Issue 6)**? BT has established processes for duct and fibre access already and equivalence of inputs would require BT to re-engineer many of its business processes. This could increase costs and disruption. Ofcom considers that a 'no undue discrimination' obligation may be more proportionate.

(c) Arrangements for **construction of new infrastructure** need to be developed **(Issue 7)**. New trenches and poles will be required in cases of congestion, where the network has been damaged and to extend the network. Ofcom considers a dark fibre remedy could be similar to the current leased lines remedy. Different arrangements (including self-build) are options for duct.

(d) An **implementation period** would be required **(Issue 8)**. Ofcom considers an implementation period would likely be required, and suggests it may need to be longer than the 8 months available in the market review currently.

(e) BT would need to recover its **development and implementation costs (Issue 9)**. Ofcom would need to consider how BT should be permitted to recover development and implementation costs.

4.8 These issues are discussed in section 6.

5. Demand for passive remedies

5.1 This section considers:

(a) whether duct and dark fibre are likely to be alternatives, or work in a complementary way;

(b) whether BT is correct in its suggestion that Ofcom should investigate CPs business cases for investing in passive remedies, and how Ofcom might best approach these issues;

(c) how limits set by Ofcom on the use or applicability of passive access might affect demand for that access; and

(d) whether the EU Civil Infrastructures Directive vitiates the need for a duct access remedy.

Issue 1: Duct and dark fibre access are complementary remedies

5.2 The 2014 Consultation Paper suggests that Ofcom may be inclined to regulate only dark fibre and not duct access. As Ofcom notes, its preliminary view is that:

> *most of the potential benefits of passive remedies appear to be associated with control of the electronic equipment used to provide leased lines and consequently dark fibre appears to offer most of the benefits of duct access*.[15]

5.3 In our view, duct and dark fibre are complementary remedies and there is likely to be demand for both in different scenarios. We also consider that adopting both remedies in parallel would be consistent with Ofcom's approach with other remedies, with experience in Europe, and with the common regulatory framework.

The different business cases for duct and dark fibre

5.4 Ofcom has recognised, correctly, that duct access may offer additional benefits over dark fibre in certain contexts. But Ofcom's view that the '*key opportunities for innovation and competition from passive remedies lie in the active layer*'[16] is too narrow a conclusion, given for example, that:

(a) **only duct access allows a CP to configure and reconfigure their network topology to suit their end customers' needs** – ducts are not necessarily designed specifically for access or backhaul fibres, and are designed as a network rather than a series of independent point-to-point connections. A CP can also combine access to existing ducts with new duct they have built themselves, in order to achieve cost savings while also creating a network topology that best serves their customers. Duct access therefore provides significant flexibility and adaptability for CPs. This flexibility is particularly important for serving major customers who may not be served by existing

[15] 2014 Discussion Paper p 33.
[16] 2014 Discussion Paper p 34.

infrastructure. A fibre link, in comparison, does not enable route reconfiguration between the two end-points; and

(b) **only duct allows significant economies of scope and opportunities for further expansion to be enjoyed**. Depending on how the duct access product is designed, CPs may use their duct access for any number of routes and network configurations, including using parts of the same duct route to serve multiple customers, and being able to re-use existing duct routes to serve additional customers by enabling incremental network expansion. In comparison, dark fibre access tends to be on a point-to-point basis and to serve as a replacement for a single leased line.

5.5 It is also clear that – even if a duct access remedy were imposed on BT – there would remain areas or customers that CPs could not justify serving if doing so would require laying fibre themselves, but could justify serving if they could buy access to dark fibre instead. Accordingly, we consider that such remedies are complementary, as the experience elsewhere in Europe (and described below) has shown.

Concurrent regulation is consistent with Ofcom's approach to duct access in the wholesale local access market

5.6 This is consistent with the approach Ofcom took in the 2010 wholesale local access market review. In that review, Ofcom imposed both PIA *and* sub-loop unbundling. It justified this approach on the bases that:

(a) '*the best solution for competition and investment is likely to vary, between different geographies and between [other] CPs*';

(b) '*a 'mixed economy' of access products should be available to allow for variations in the relevance of each product, and for market uncertainties*'; and

(c) '*we considered this mix of remedies to be proportionate partly because they would be likely to be complementary, with some being suitable in some areas and others in other locations*'.[17]

5.7 These points are equally true in relation to markets for business connectivity.

Concurrent regulation is consistent with experience elsewhere in Europe and the common regulatory framework

5.8 These same arguments have already led some European regulators to treat access to duct and to dark fibre as complements. For example, in 2013, the Austrian telecoms regulator imposed SMP conditions requiring the incumbent to provide duct and dark fibre in connection with an access service.[18] The regulator expressly imposed concurrent obligations in respect of both duct and dark fibre on the basis that:

[17] 2010 WLA Statement, pp 158–9.
[18] Telekom Control Kommission, *Beschied – M 1.1/12 – 106* (16 December 2013) https://www.rtr.at/de/tk/M1_1_12/30308_M_1.1_12_web.pdf.

(a) there were likely to be certain areas where CPs would be able to install fibre themselves, and others where laying new fibres would not be economic but use of existing dark fibres might be; and

(b) it wished to promote competition at the deepest layer possible in each context.

5.9 Regulation of both duct and dark fibre is most consistent with an approach that complies with BEREC's common position that remedies in the market for wholesale (physical) infrastructure access at a fixed location should:

(a) be based on the 'ladder of investment' principle; and

(b) 'encourage infrastructure competition at the deepest level where it is reasonable, to reduce barriers to entry'.[19]

5.10 We consider that the approach most consistent with BEREC's position is for duct and dark fibre remedies to co-exist.

5.11 The European Commission has taken an expansive view of the options that should be available to CPs in respect of backhaul. For example, the NGA Recommendation provides that:

> *When imposing sub-loop unbundling remedies, NRAs should adopt appropriate backhaul measures to make such remedies effective. Access seekers should be able to select the solution best fitting their requirements, whether dark fibre (and where relevant copper), Ethernet backhaul or duct access*.[20]

5.12 Thus, the NGA Recommendation clearly contemplates that regulated access to dark fibre and duct should be provided for where the markets for such products are not effectively competitive in connection with the deployment of next generation access networks (including those serving business customers[21]).

Issue 2: Proving evidence of demand

5.13 In the past, Ofcom has appeared unconvinced there is evidence that passive remedies will be used or will unlock new investment or innovation and has suggested that this may be a reason not to introduce passive remedies. More recently, in its response to the 2014 CFI, BT has argued that:

> *The important question is the extent to which there are realistic business cases for [the] different uses [of passive remedies] and what the wider impacts, both positive and negative, would be where there are feasible business cases.*[22]

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[19] *BEREC Common Position on Best Practice in Remedies on the Market for Wholesale (Physical) Network Infrastructure Access (Including Shared or Fully Unbundled Access) at a Fixed Location Imposed as a Consequence of a Position of Significant Market Power in the Relevant Market* (BOR (12) 127)) BP 2 and 3.
[20] EC Recommendation 2010/572/EU (20 September 2010) ('NGA Recommendation') preamble para 30.
[21] See definition of 'next generation access (NGA) networks' in NGA Recommendation art 11.
[22] BT, *BT's Response to Ofcom's Consultation Document: Business Connectivity Market Review: Timetable and Initial Call for Inputs* (27 May 2014) p 23.

5.14 For the reasons set out below, we think BT's suggestion that CPs should be required to demonstrate a 'realistic business case' is misguided. We are also concerned that Ofcom appears to be suggesting that duct access could be unnecessary, because dark fibre will be sufficient for the uses for which Ofcom believes CPs will invest in passive remedies. This section discusses the role we think it is appropriate for evidence of demand to play in Ofcom's assessment of whether to introduce passive remedies. It does not deal directly with the question of what the plans of investors or operators might be in relation to passive access.

The role of 'demand' in the regulatory framework

5.15 It is important to understand the role that evidence of 'demand' or 'intention to invest' from operators plays in a regulator's decisions about network access. Such evidence is not a pre-requisite for setting a remedy – indeed, the Access Directive specifically rejects the notion that it is appropriate to link the terms of access to CPs' degree of investment:

> *National legal or administrative measures that link the terms and conditions for access or interconnection to the activities of the party seeking interconnection, and specifically to the degree of its investment in network infrastructure … may cause market distortion and may therefore not be compatible with competition rules*.[23]

5.16 More broadly, the need to avoid tying the setting of SMP conditions to evidence of demand is clear from the numerous references in the CRF to SMP obligations that impose duties of transparency – that is, information about costs (in the form of regulated prices) and service characteristics (set out in reference offers) that enable communications providers to decide whether or not to invest in certain ways of reaching their customers. If those providers were required to prove that they would make those investments before that transparency had been provided, the objectives of the CRF would be undermined.

Requiring evidence of demand sets an impractical threshold for CPs

5.17 An approach that meant *de facto* that only remedies with evidence of 'substantial demand' could be adopted would risk creating a 'chicken-and-egg' problem that could undermine the effective operation of the regulatory framework. Demand for passive remedies is likely to arise from the experimentation and resulting innovation that would be facilitated by the introduction of passive remedies. By its nature, the level of such demand may not be predictable.

> The most pertinent example of a passive remedy that was imposed, and where there was no immediate evidence of take-up, is in relation to Oftel's efforts to introduce LLU during the late 1990s. Rather than being a counter-example, it is now widely recognised as a textbook example of how an incumbent (enabled by poor regulatory decisions) can thwart the effective take-up of network access. This was exposed by the striking success that followed Ofcom's rejuvenation of LLU in 2004-05 – culminating in today's market, in which LLU is the leading form of network access, used to deliver services to millions of homes and businesses, with numerous innovative products such as Ethernet First Mile introduced by CPs using LLU. As

[23] Access Directive, Recital 7.

Ofcom has noted, 'LLU has been an effective access remedy, so much so that it has enabled a significant degree of deregulation in the downstream WBA market'.[24]

5.18 Ofcom is duty-bound to equip itself with an understanding of the likely impacts of its policy choices.[25] Ofcom has been able to do so even in circumstances where competing operators have not necessarily been in a position to know in advance to what extent they will be aiming to switch to a different form of network access. The most obvious and relevant example of this occurring was in relation to PIA. By definition, the market innovations that will result from investment in PIA could not be known and identified in advance. Such innovation may well incite further flow-on investment. Ultimately, then, requiring CPs to demonstrate the level of investment they will make is likely to be a futile exercise.

5.19 It is entirely appropriate, therefore, that Ofcom has expressly disavowed such an approach, making it clear that evidence of likely investment is a way to calibrate (or 'cross-check') the balancing it undertakes in relation to its statutory criteria when weighing up whether to shift its approach to setting SMP remedies.[26]

Requiring evidence of demand is not consistent with Ofcom's past practice

5.20 In introducing PIA, Ofcom did not require any substantive evidence that there was demand for the service. Ofcom's final statement noted that, although historically there had been very little interest in passive remedies:

> *More recently there had been renewed interest in the context of NGA deployment with two UK CPs expressing interest in infrastructure sharing in their responses to our Superfast Broadband Consultation in 2009. We also reported during the last year the level of interest in infrastructure sharing appears to have been maintained and possibly increased as evidenced by the interest from CPs in the Broadband Stakeholder Group work on physical infrastructure sharing*.'[27]

5.21 Ofcom concluded that 'demand still appeared limited with most CPs apparently regarding active NGA remedies as more important'.[28] It nevertheless determined to impose passive remedies. Indeed, Ofcom expressly proceeded only on the possibility that physical remedies could support investment in competing networks, and recognised that its approach was:

> *consistent with the Commission's NGA Recommendation (in draft form when we published the consultation document), which favours giving an opportunity for these remedies to work* (our emphasis).

[24] Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30* (3 July 2013) p 467.
[25] See, for example, section 7, CA03.
[26] See COLT v Ofcom [2013] CAT 29 at 93, where the CAT describes Ofcom's position (in the context of upholding Ofcom's decision) as being that 'a willingness to make substantial infrastructure investments was not a sufficient condition for imposing passive remedies, said OFCOM, but was merely a relevant matter for it to take into account.' The reference to a 'cross-check' was made by counsel for Ofcom in submissions.
[27] 2010 WLA Statement, p 101.
[28] 2010 WLA Statement, p 108.

5.22 Ofcom therefore observed that, rather than second-guess the market, 'our focus was on getting the physical remedies to the position where OCPs have sufficient information to determine whether or not to use them'.[29]

5.23 This is despite the fact that there were likely to have been more substantive implementation costs in the wholesale local access market, since BT had not previously offered a regulated duct access product.

Likely levels of demand are high in any event

5.24 Nevertheless, it is clear that Ofcom places significant value on understanding, as best it can, the likely consequences of any move to passive remedies, and that includes the best available evidence on the likely investment plans of different operators. While not determinative, evidence of substantial investment is an input into Ofcom's assessment of the impact of its proposals.

5.25 We understand that individual members of the Passive Access Group will make separate submissions to Ofcom demonstrating the level of demand and their likely responses to the opportunity to use passive remedies. While we think it is important to avoid any drift towards a *de facto* requirement, setting the bar too high and (as BT has suggested) requiring more substantial evidence to justify the introduction of passive remedies than the evidence of demand it has previously required in comparable contexts, we do consider that there is substantial evidence of latent demand for passive remedies.

5.26 First, the interest shown by stakeholders in the wholesale local access market review suggests ongoing and significant interest in using passive remedies for business connectivity purposes (indeed, *greater* interest than there was for using such remedies for local access purposes, which Ofcom nevertheless regulated). In the wholesale local access market review, Ofcom reported that:

> *some of the respondents are apparently interested in infrastructure sharing for purposes that may fall outside the scope of the proposed PIA remedy (such as mobile backhaul and leased lines) potentially meaning that in practice demand for PIA would be less than indicated by the responses*.[30]

5.27 In comparison, we note that the members of the PAG – EE, TalkTalk, Sky, Vodafone, Three UK and Colt Technologies – placed a SOR for dark fibre, suggesting there is significant latent demand for such a service. CPs have also indicated significant interest in duct access.

5.28 Secondly, past performance in closely analogous markets suggests that there is likely to be considerable demand for both access to BT's duct and dark fibre given the substantive benefits that passive remedies would bring to the UK, including:

(a) new products and product functionality;

(b) new pricing structures;

[29] 2010 WLA Statement, p 160.
[30] Ofcom, *Review of the Wholesale Local Access Market* (7 October 2010), p 108.

(c) greater flexibility in terms of network topologies; and

(d) Improvements in service quality.

5.29 It is important to recognise that many of the types of products, functionality, pricing and flexibility that could be enjoyed from passive remedies already exist in those areas where operators have already invested in competing passive infrastructure. The benefit of passive remedies is that such innovations could be extended to a much greater area, by reducing the cost of deploying on-net solutions by up to 80%.[31] This would enable customers in those areas to enjoy significant new products and services that are based on their own needs, rather than being limited to products based on BT's wholesaled active services – which creates what has been described as 'me too competition' which fails to allow product differentiation and innovations.[32] Improved availability of these products and services will ultimately benefit UK consumers, by facilitating more widespread rollout of communications networks that directly serve those customers (for example, leading to improved mobile network coverage and capacity) and, more indirectly, by enabling UK businesses to exploit new communications solutions to improve their efficiency and responsiveness.

5.30 The types of innovations that passive remedies could enable are illustrated by the services available in the Central London area, where some CPs have been able to justify constructing their own passive infrastructure. Passive remedies offer the opportunity for these benefits (such as connections with lower latency and higher service levels than are available elsewhere) to be made available more widely.

A key example of potential new products and functionality is the ability to deliver business connectivity services to business parks. For example, the Federation of Small Businesses has noted that '*many urban or semi-urban businesses can experience poor coverage … and even where broadband is available the range and quality of services often fall short of what businesses require. Tailored business packages offering symmetrical upload and download speeds are often prohibitively expensive, while business parks and premises have been overlooked in the roll-out of local fibre networks to residential areas*'.[33]

These small businesses fall into a 'black spot' which the current market has neglected: too dependent on reliable broadband to accept the quality of a standard residential service, but too small to justify the price of a leased line. This problem has been recognised by Ofcom in its most recent Infrastructure Report, which acknowledges that '*a significant proportion of SMEs are unable to access superfast broadband due to gaps in coverage. These may be in cities, business parks and in rural areas*.'[34]

[31] EC/Analysys Mason, Support for the Preparation of an Impact Assessment to Accompany an EU Initiative on Reducing the Costs of High-Speed Broadband Infrastructure Deployment (2012) p 6.
[32] SPC Network, *30 Years After Privatisation: Is the Telecoms Market Working?* (2014) p 29.
[33] Federation of Small Businesses, *The Fourth Utility: Delivering universal broadband connectivity for small businesses across the UK* (July 2014) p 4.
[34] Ofcom, *Infrastructure Report 2014* (8 December 2014) p 62.

As Ofcom has acknowledged, the current market structure leaves many SMEs with suboptimal choices, including 'over-provisioning' by purchasing leased lines, or accepting residential quality broadband insufficient for their needs. However, passive remedies would give CPs a range of options to deliver services to these 'black spots', for example by delivering services using BT ducts for backhaul fibre. Introduction of passive remedies therefore offers the opportunity for CPs to address this well-documented unmet demand and provide substantial benefits to SMEs in the UK.

5.31 Thirdly, and most importantly, looking outside the UK, the experience of mandating regulated access to duct and dark fibre in other European jurisdictions shows that the regulation was a 'trigger' for the entrance of a number of innovative products in the market and has had substantial take-up. For example:

(a) one member of the Passive Access Group, Colt, is laying metropolitan area networks in various major European cities, which include links used to serve major enterprise customers. These networks offer state of the art services to major businesses and have proven highly successful alternatives to the incumbent's leased lines. In designing these networks, Colt plans the route and topology by identifying the customers it wishes to serve and then implementing a network design based on use of existing infrastructure. This model has worked best in jurisdictions with a well-functioning passive access regime (including Italy, Spain and Portugal) and in particular those countries that offer access to both a regulated duct and a regulated dark fibre offering. Colt sees introduction of passive remedies as a key hurdle to overcome so that a similar competitive offering can be introduced to the UK. We understand that more specific details of how Colt's business model and plans rely on passive remedies has been set out in its response to 2014 CFI;

(b) in Portugal, passive remedies have been instrumental to the roll-out of high-speed broadband fixed line and mobile networks. As a member of the Portuguese regulatory body recently noted, 'The main regulatory driver for that success has been to impose asymmetric access to the ducts and poles of Portugal Telecom. This measure was taken by [the regulator] almost nine years ago and was an important factor in reducing the cost of investing in broadband networks'.[35] Indeed, the development and quality of Portugal Telecom's duct reference offer – including its broad applicability to both backhaul and access network segments – supported what some describe as a 'run for fibre' with competitors to Portugal Telecom, such Opitimus and Vodafone, being able to compete with ZON (the cable company, formerly owned by PT) and PT, using duct access as a critical input;

(c) in the Netherlands, a privately backed company, Reggefiber, built a new fibre network which provided dark fibre on an open-access basis. As a result of its success, the

[35] ITU News, *Meeting the demand for broadband capacity in Portugal: Interview with Professor João Confraria Member of the Board of ANACOM* (2014) available at https://itunews.itu.int/En/5222-Meeting-the-demand-for-broadband-capacity-in-Portugal.note.aspx.

incumbent KPN initially acquired 41% of the share capital of Reggefiber[36] and has since acquired all the remaining share capital.[37] Regulated access to dark fibre was introduced in connection with KPN's acquisition of shares in Reggefiber, in recognition of the benefits to innovation. Passive access has unlocked substantial investment and has led to a significant move away from traditional leased lines towards more innovative and customised fibre-based services among businesses in the Netherlands – reducing the cost of services and narrowing the sharp distinctions between different categories of services. However, as the national regulator has noted, this success relies on third party access;[38]

(d) the City of Stockholm has invested in deployment of a wholesale-only network providing dark fibre to operators on an open-access basis. Although the offer is not regulated, the wholesale-only model provides the types of incentives that regulated access is intended to emulate. The result has been thriving competition, with over 100 operators using the network and able to easily scale and redesign their networks using dark fibre to meet customer demands. In turn, this has led to a proliferation of the widespread availability to SMEs of services previously accessible only to large enterprises, a proliferation of ICT companies (with more than 1,000 ICT businesses in one so-called 'science city') and prevalent use of services such as cloud computing. It has also led to significant flow-on benefits in other markets – for example, the fact that the first launch of LTE services worldwide was in Stockholm was attributed to the presence of a dark fibre offering for mobile backhaul;[39] and

(e) in France, the amount of duct leased from France Telecom increased by 40% in the 12 month period ending 30 September 2014.[40] This followed already extensive NGA deployment using alternative infrastructure in major urban centres, such as sewer systems.

5.32 These benefits demonstrate that other countries in Europe which have introduced passive access (or where passive infrastructure access is available on a reasonable commercial basis) have found there was significant latent demand for competition at a deeper layer in the value chain. There is no apparent reason why the level of demand for passive infrastructure access in the UK would be any less than in the various other European countries which have successfully introduced this remedy in the business connectivity market.

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[36] Towerhouse Consulting, *Wholesale High Speed Access Services: Lessons from the UK and around the globe* (February 2010) p 19.
[37] KPN, *KPN Acquires Remaining 40% Stake in Reggefiber* (18 November 2014) available at http://corporate.kpn.com/press/press-releases/kpn-acquires-remaining-40-stake-in-reggefiber.htm.
[38] Authority for Consumers and Markets, *Presentation at WIK Conference about the business telecom market* (2 December 2014).
[39] See ACREO, *Stokab, a Socio-Economic Analysis: Summary* (30 May 2013) available at https://www.acreo.se/sites/default/files/pub/acreo.se/EXPERTISE/broadband/socio-economic_return_of_stokab_investment_twocolumns_notjustify.pdf.
[40] ARCEP, *Observatoire / Haut et Très Haut Débit: Marché de gros* (27 November 2014) available at http://www.arcep.fr/7191/index.php?id=10292.

Issue 3: The impact of limitations on demand

5.33 Ofcom has stated that if it imposed passive remedies, it would likely need to impose certain limitations on access to those remedies:

> *In markets that are found to be effectively competitive we would not be able to impose a passive remedy under the SMP framework as by definition there would be no need for an SMP remedy (at least in relation to that market)*.[41]

5.34 Ofcom has raised concerns in relation to whether limiting duct and dark fibre access to specific purposes or markets is feasible, and if so whether it is likely to impact demand and the potential benefits of passive remedies. In Ofcom's view:

> *While any limitations to the scope of passive remedies could reduce the potential adverse consequences of their imposition, we also recognise that such limitations may also limit their benefits and possibly also the usefulness of passive remedies to CPs. As part of our assessment we will need to consider the impact of such restrictions on the scale of benefits that can be achieved by CPs and how likely CPs would be to use passive remedies with such limitations*.[42]

5.35 We consider whether such limitations can be cost-effectively policed and the consequences if they are not in section 6 below. However, in this section, we query whether Ofcom is correct in assuming that such limitations are appropriate. In our view, it would be inappropriate for any passive remedies to be highly constrained by reference to the purpose for which, or the areas within BT's network footprint in which, they can be used. The experience with PIA – for example in relation to its non-permitted use for wireless access services – suggests that any limitations will be interpreted narrowly by BT and it is therefore important that Ofcom avoid ambiguity about the scope of any passive remedy.

5.36 The experience with implementation of PIA suggests that Ofcom should be careful to ensure that the design of passive remedies does not constrain CPs simply to emulating existing services provided BT. In particular, if Ofcom were to restrict the use of ducts to particular the downstream product markets where Ofcom finds that BT has SMP, then the effect will be to limit CPs use of duct access to products and services that are based on the same technical parameters as BT's existing products. This will not solve the problems that exist in today's business connectivity market, with its 'black spot' of small to medium businesses that require higher quality services than residential broadband but which cannot currently afford the price of dedicated leased lines. It will also turn Ofcom's market definitions from being a *tool to understand* current market dynamics into a *self-fulfilling prophecy* that directs the path of future market growth and innovation, by allowing SMP remedies to introduce competition in the market only where it falls within the neat market categories and segmentations already identified by Ofcom. Such an outcome clearly cannot hope to emulate the effect of a truly

[41] 2014 Discussion Paper, p 36.
[42] 2014 Discussion Paper, p 37.

competitive marketplace, where growth is likely to emerge through enabling CPs to produce innovative, 'category-busting' and bespoke services tailored to meet the requirements of individual customers. Significant market growth and development can only be expected when CPs are in a similar position to BT in terms of the flexibility with which they can use BT's national passive infrastructure networks. Accordingly, passive remedies offer the prospect of substantial growth and development in the market – but this is only if passive remedies allow CPs to deliver innovative new services that disrupt settled product categories and market structures. This is consistent with BEREC's common position on best practice in remedies for wholesale leased lines, which emphasises that access to colocation and associated facilities should not be 'artificially segregated by product or market'.[43]

Limitations are not necessary – they are a matter for Ofcom's discretion

5.37 We are not convinced that such limitations are required in most cases when *setting SMP conditions* regarding network access; most 'limits' that are discussed have in fact flowed from the process of defining markets. We consider that the application of limits in remedies, if it arises at all, is a matter for Ofcom's discretion, and must (in accordance with Ofcom's wider duties) only be imposed where they are necessary to achieve a specific objective or overcome some specific problem.

Service description and purposive limitations are not appropriate

5.38 Reviewing Ofcom's comments in the CFI, the Consultation and related documents, it is useful to consider three different issues, each of which can affect the implementation of passive access:

(a) a 'pure' **geographic limit** – that is, because an area defined to comprise the relevant market has been set or (as contemplated by BEREC) where the remedy is not available throughout the entire geographic market area;[44]

(b) a limit that flows from the nature of the network topology or **service description** but that may be described in geographic terms (normally, in terms of the criteria that must be met by the fixed locations that one or both ends of the service before that connection falls within the scope of regulated supply). In some cases, these restrictions have also been described by Ofcom as 'geographic', although they are perhaps more accurately termed 'service description limits'; and

(c) limits on the **purpose** for which a particular form of network access can be used. For reasons discussed below, we think it is important to distinguish between:

(1) a *de facto* limit on the purpose for which a service can be used – for example, because there is a requirement to make network access in a defined form available for one purpose and the configuration of the service to fulfil that

[43] BEREC, *BEREC Common Position on Best Practice in Remedies Imposed as a Consequence of a Position of Significant Market Power in the Relevant Markets for Wholesaled Leased Lines* (2012) p 5.
[44] BEREC has acknowledged that 'In case of geographical variations in competitive conditions within this national market, it may be appropriate to vary remedies within that national market': BEREC, *BEREC Common Position on Geographical Aspects of Market Analysis (Definition and Remedies)* (2014) p 35.

purpose means that it is not suitable for a second purpose that might otherwise be technically feasible; and

(2) an express restriction, involving the adoption by Ofcom of terms in an SMP condition that seek to prevent the use of network access that would otherwise be technically feasible, purely because that usage is for a purpose that falls outside the scope of the services considered in the market review.

5.39 We acknowledge that setting geographic limitations is consistent with Ofcom's existing approach and may have theoretical justification. Where applied appropriately, such limitations should not impact demand for passive remedies, since such constraints are imposed on the basis that CPs have access to competitive alternatives to passive remedies in the relevant areas. However, setting such geographic limits introduces considerable additional regulatory burden on Ofcom, BT and CPs. It also provides additional opportunity for the incumbent to game access seekers and exercise discrimination. Often within market boundaries defined for the purposes of determining SMP (whether geographic or product) there may be submarkets that, if considered in an extracted and standalone basis, might suggest the existence of a lower or weak SMP. However, either carving out each and every pocket of possible reduced market power or permitting such pockets to overshadow the implementation of an SMP based remedy for the whole market needs to be considered most carefully, taking into account any possible detriments to the likely reduction in overall benefits to competition.

5.40 Accordingly, the following sections address service description and purposive limitations.

(a) Service description limits

5.41 Service definitions have been used in the past (e.g. in relation to the PIA remedy imposed in the local access market) but primarily to prevent 'spill-over' of remedies in WLA into the market(s) for business connectivity. We do not think service description limitations should be necessary – and the experience of PIA suggests they can be detrimental if they are overbroad or ambiguous.

5.42 First, we do not consider that those limitations will be necessary if Ofcom regulates access to duct and dark fibre in relation to both the local access and the business connectivity markets.

5.43 The primary reason given by Ofcom for limiting passive remedies to the access network in the context of the wholesale local access market review was that 'it would be inappropriate for us to extend the scope of PIA without assessing the need for and impact of a PIA remedy in the business connectivity market.'[45] Further, the service description limitations Ofcom referred to in its final decision in the NGA context were those related to the market for leased lines – for example, Ofcom expressly limited the duct access obligation so that it would not require BT to

[45] 2010 WLA Statement, p 112.

provide access for fixed and mobile backhaul[46] and for services to a single business premises or a public sector organisation.[47]

5.44 Accordingly, there is no reason to think that such restrictions are likely to remain necessary when extending passive access to markets for business connectivity in relation to the boundary between residential broadband and business connectivity markets (there is, arguably, no further 'spill-over' concern that remains). Given that business connectivity and local access together comprise the only applications that are contemplated for passive remedies, it seems an odd result for Ofcom to insist on there being separate product categories – which again suggests an approach that allows the process of market definition to dictate the form of the remedy, rather than tailor a remedy that is best suited for the bottleneck to competition.

5.45 Secondly, there is a longer-term case for seeking to move away from a definition of network access that is tied to the topology and site-location decisions of the incumbent network provider. In particular, usage restrictions:

(a) are unlikely to be consistent with the concept of technology neutrality; and

(b) could arbitrarily limit CPs' flexibility in deploying new types of network topologies – leading to regulation that inhibits innovation, prevents the business connectivity market from evolving, and protects the current market structure from the potential disruption which is beneficial to customers and which often results from effective competition.

5.46 A number of other European regulators have determined not to impose usage restrictions when mandating access to duct and dark fibre in the context of a market review for these reasons. Where these remedies are imposed under an SMP framework, these regulators have often done so by recognising that the purpose of an SMP remedy is not to perpetuate existing market structures or "protect" the NRA's existing market definitions. For example:

(a) in Portugal, where access to ducts has been widely used since it was mandated in 2004, first in the deployment of LLU-based networks and then in relation to fibre network deployment, the regulator has imposed no limits on the service descriptions for which duct access may be used. Access rights are granted without any consideration of the intended use – that is, regardless of whether the purchasing operator intends to use that connection for a business or residential connection, the deployment of a leased line or some other use (including, for example, supporting a cable network deployment);

(b) in its review of the markets for fixed telecommunications infrastructure and wholesale broadband services, the Spanish telecoms regulator granted access to duct and dark fibre for purposes related to any access network[48] (later clarified to apply to fibre, as

[46] 2010 WLA Statement, pp 112–3.
[47] 2010 WLA Statement, p 112.
[48] Comisión Nacional de los Mercados y la Competencia, *Análisis de Mercados - Revisiones Anteriores* (22 January 2009) section II.4.3.3.2.

opposed to copper-based services[49]). It was concerned to avoid requiring competing services to be configured in the same way as the incumbent's services. The regulator recognised that, in light of the market definition, such access should be connected with deployment of access networks. However, it deliberately adopted a very broad view of this requirement. This has led to significant up-take of duct access and significant ability of operators to innovate and develop new products, with at least one operator noting that Spain's favourable environment for fibre investment and deployment is thanks to the favourable access conditions for ducts.[50] As at September 2014, there were more than 26 operators acquiring duct access from the incumbent, with three major operators/joint ventures having announced plans to deploy FTTH networks to 6 million, 7 million and 14 million households respectively.[51] This compares to the comparative lack of success associated with the PIA remedy in the UK wholesale local access market; and

(c) in its review of the market for wholesale access infrastructure, the Italian incumbent was required to offer '*undertake to submit an offer for access and sharing of their passive infrastructure, and if this is not possible, to offer access to its dark fiber*'. Again, the regulator determined that this access should not be limited to local access infrastructure, but should include provision for backhaul for similar reasons: it considered any sharp distinction between access and backhaul to be arbitrary and technically limiting.

5.47 The NGA Recommendation also suggests that it is not appropriate to limit duct and fibre access through restrictive service descriptions. The NGA Recommendation provides that '*NRAs should require the SMP operator to provide access to its civil engineering infrastructure under the same conditions to internal and to third-party access seekers*' (our emphasis).[52]

5.48 Indeed, in response to a proposal by the German regulator ('BNetzA') to impose SMP remedies requiring access to ducts only up to the nearest street cabinet, the Commission noted that:

> *Whilst the Commission welcomes BNetzA's proposal to impose an obligation on DT to provide access to its ducts, the Commission also takes note that this obligation shall only apply in order to facilitate access to the street cabinet in the case of subloop unbundling / FttC. The Commission draws BNetzA's attention to the fact that the NGA Recommendation does not restrict the requirement to provide duct access to such a*

[49] Comisión Nacional de los Mercados y la Competencia, *Agreement which Approves the Decision Regarding the Analysis of the Offer for Access to Ducts and Junction Boxes of Telefónica de España, S.A. and their Adequacy to the Requisites of the Comisión del Mercado de las Telecomunicaciones (MTZ 2009/1223)* (19 November 2009) p 7, available at http://telecos.cnmc.es:8080/c/document_library/get_file?uuid=628f3a56-11e1-4fa3-85ce-7c7c982f707d&groupId=10138.

[50] JazzTel, *2013–2017 Business Plan: Foundations for Continued Value Creation* (14 March 2013) p 22, available at http://inversores.bolsa.jazztel.com/documents/10156/861971/2013-2017+Business+Plan+Presentation.

[51] Comisión Nacional de los Mercantos y la Competencia, *Infrastructure Sharing for NGA Deployment* (22 September 2014) p 15 and 23, available at http://www.intt.tn/upload/files/Espagne.pdf.

[52] NGA Recommendation, Annex II art 1.

scenario but rather recommends that NRAs should mandate access to civil engineering infrastructure wherever duct capacity is available (our emphasis).[53]

5.49 Accordingly, we do not consider that imposing restrictive service descriptions would be necessary or consistent with the concept of technology neutrality and its application to passive remedies across Europe.[54] Nor do we consider that it would be in the best interests of customers.

(b) Purposive limits

5.50 In the case of *de facto* limits on the use of passive access, these limits reflect the underlying technical characteristics of the access provided. These are not matters that Ofcom decides; they are part of the factual matrix within which it takes its decisions – and so there is no need for Ofcom to do other than to note the existence of those facts and to take account of those limits in the event that they seem relevant to Ofcom in assessing the impact of a particular SMP condition. Given the highly flexible nature of passive access, it seems to us unlikely that any particular *de facto* limits on the purpose for which passive access could be used are likely to be very significant, other than those that are built into the service description.

5.51 In the case of *express* limits on the use of passive access (or any other form of network access), we think that such restrictions are of questionable utility and may be incompatible with the common regulatory framework.

5.52 In relation to the benefit to consumers, taken to its logical conclusion, over-reliance on these sorts of 'purposive limits' leads to some very odd results. For example, assuming that very high-bandwidth services remain effectively competitive (throughout the UK), then it is possible to envisage a situation where, for example, duct access is available for the purpose of competing with mid-range connections, but not for higher bandwidth connections. We think the better view of the regulatory regime is that an SMP condition can require that network access be provided in a particular form or suitable for a particular purpose – but that if the nature of that network access is that it is a flexible, general-purpose input, then it is not

[53] The principle that duct access should at least cover backhaul infrastructure is also clear in the Access Directive. The Directive provides that 'where an operator has [SMP] obligations … concerning wholesale network infrastructure access', the operator's reference offer must include 'when relevant, access to network elements which are not active for the purpose of roll-out of backhaul networks': Directive 2002/19/EC (7 March 2002) Annex II, A.1.

[54] In the event such limitations were contemplated, we would note that in relation to duct, this would still be better than the *status quo* because a decision by Ofcom to require BT to provide duct access for business connectivity purposes will in fact *expand* the permissible purposes and *reduce* the relevance of purposive limitations in respect of duct access. Expanding the remedy to business connectivity markets will therefore create significant new advantages for CPs that did not apply to PIA, including economies of scope (ie, because once a CP has regulated access to duct for one purpose, there would be considerable efficiency benefits in being able to use the same duct for alternative purposes, in some cases potentially at no incremental cost. This advantage is less applicable to PIA, since the service description does not allow duct to be used for purposes that fall outside the service description).

appropriate (or consistent with the objectives of the regime) to seek to restrict the usages to which network access can be put.

5.53 In relation to compatibility with the common regulatory framework, we think there is a real question about whether such limits are lawful. Defining geographic markets (in the sense implied by the EC guidelines, of an area of common competitive constraints[55]) restricts usage by necessity, since a connection to a fixed location cannot be moved from one place to another. Defining SMP conditions with limits that flow from the service descriptions flows from the need to be clear what network access is under consideration, and what would be the impact of an SMP condition requiring it to be provided.

5.54 But the issue of what *purpose* a connection is used for is different. Unlike a location or a service configuration, purpose is not exclusive or exhaustive; there is scope for a connection that has been obtained for one purpose also to be used for another purpose. Implicit in Ofcom's approach is a view that as well as requiring network access to be provided for *one* purpose (participating in the downstream market for consumer broadband), Ofcom also can and should also restrict the use of that network access for *another* purpose. We question whether such additional usage restrictions (whether purportedly imposed by Ofcom or forced on operators by BT as a matter of contract) are lawful and/or compatible with competition law. Certainly, if such restrictions had been adopted or permitted to be imposed by contract in relation to, for example, preventing the use of voice calls to access narrowband internet services, or to enable different forms of voice call competition (via calling cards, for example) could have harmed the interests of consumers in previous phases of market development.

5.55 In relation to the question of whether contractual limits are permissible – that is, whether BT could refuse to supply a form of network access except on condition that the user agrees to limit their downstream competitive activity in particular ways – it seems an area where it would be imprudent for Ofcom to be too definitive. In the event that these issues are not resolved commercially, these issues may be referred to Ofcom to resolve as regulatory disputes, and will not be helpful if Ofcom is seen to have pre-determined the outcome or fettered its discretion in relation to those issues.

5.56 In any event, in its reasoning thus far, there is no suggestion that Ofcom would seek to adopt such express limitations in relation to passive access for business connectivity.

Issue 4: The impact of the EU Civil Infrastructure Directive

5.57 The EU Civil Infrastructure Directive[56] aims to facilitate and incentivise the rollout of high-speed communications networks by ensuring operators have the 'obligation to meet all reasonable requests for access to its physical infrastructure',[57] including ducts. It will require

[55] EC, *Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services* (2002/C 165/03).
[56] *Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 on measures to reduce the cost of deploying high-speed electronic communications networks* (L 155/1).
[57] Art 3(2).

all operators to grant access to their duct infrastructure for deployment of high speed networks. Ofcom suggests this may offer an alternative means of obtaining access to BT ducts, and ponders the possibility that the Directive may therefore vitiate the need for Ofcom to implement a duct access remedy.[58]

5.58 There is no suggestion that the Directive will provide any solution in respect of dark fibre.

5.59 As a threshold issue, our understanding is that there may be an expectation from some government stakeholders that the Directive will apply to utility infrastructure but not the networks of CPs. Accordingly, in our view, it would be important for Ofcom to ensure that all stakeholders' expectations are aligned as to the scope of the Directive.

The Directive does not replace the need for SMP remedies

5.60 We disagree with the suggestion that the Directive vitiates the need for a duct access remedy under the SMP framework. The Directive clearly has scope to offer significant new avenues for operators rolling out new network infrastructure. However, the role of the Directive appears to be supplementary to, rather than a replacement for, any SMP-based remedy.

5.61 The Directive makes this point plainly, referring to the fact that the Directive is:

> *… without prejudice to the Union regulatory framework for electronic communications set out in Directive 2002/21/EC of the European Parliament and of the Council as well as Directive 2002/19/EC of the European Parliament and of the Council, Directive 2002/20/EC of the European Parliament and of the Council, Directive 2002/22/EC of the European Parliament and of the Council and Commission Directive 2002/77/EC, including national measures adopted pursuant to that regulatory framework, such as specific symmetric or asymmetric regulatory measures.*[59]

5.62 Since the Directive is without prejudice to the operation of the common regulatory framework, it would inconsistent with the duties imposed in the CRF and the terms of the Directive itself for Ofcom to cease to apply, or decline to give effect to, the terms of the CRF. Accordingly, where a market review establishes that one or more operators have SMP, the NRA must set SMP conditions in accordance with the common regulatory framework to address SMP. An NRA such as Ofcom ought not to take into account the effect of regulatory interventions such as the Directive in assessing SMP (instead, it should apply what has been referred to as the 'modified greenfields' approach, and assess market power ignoring the effects of regulation). If the outcome is that a single operator such as BT has two sets of obligations to provide access (under the SMP conditions set under the CRF, and under the Directive) then it may be open to the operator to give effect to those obligations through a similar set of regulated services (although it must ensure that the service portfolio meets the requirements of both sets of rules).

5.63 Consistent with the fact that the Directive is aimed at different concerns to the CRF, the access regime required by the Directive is of a type that is very different from that used to address

[58] 2014 Consultation Paper, pp 15–16.
[59] Recital 12.

SMP. In particular, the terms of access may be determined by the access provider and need only be 'fair and reasonable' – there is no requirement to set and publish prices in advance, which if absent, as the PIA remedy has demonstrated, creates significant uncertainty and hinders the ability of investors to develop a business case for using passive access. Further, either party may refer a dispute if the terms and conditions of access are not agreed within two months. While any dispute must be determined within four months,[60] the Directive is silent on the timing of any appeals. The Directive does not contemplate the terms and conditions being set on an ex ante basis or for the terms of any dispute determination to apply other than on an *inter partes* basis. It is well established in the EU that this type of *ex post* dispute resolution regime does not promote the certainty necessary to counteract an access provider's SMP. Finally, the Directive contains no requirement for non-discrimination (let alone equivalence of inputs), allowing providers of duct access to discriminate between their own downstream businesses and access seekers. Accordingly, the need to review markets and set SMP conditions remains fully applicable to the markets that fall within the scope of the Directive.

5.64 Similar reasons persuaded the regulator in Sweden ('PTS') to change course after initially proposing not to impose duct access obligations on TeliaSonera in light of the Directive.[61] The regulator ultimately determined that it was not appropriate to rely on the Directive on the basis that:

> *An important reason is that the Directive is not primarily aimed at overcoming competition problems. The aim is rather to accelerate and reduce the cost of deploying high-speed networks in general. … An additional reason to be cautious in drawing conclusions about the importance of the Directive is that the Directive at the time of this decision is not yet implemented in Swedish law. This means that for at least a year and a half it will not have any effect on TeliaSonera and its duct. Since its implementation in Swedish law has not yet been finalized and there is no experience of how well it will work in practice, it is difficult to assess what the impact of the Directive will be after 1 July 2016. PTS considers, in the light of the reasons described immediately above, that the Directive and its subsequent implementation in Swedish law together do not constitute a cogent reason for PTS refraining from imposing an obligation on TeliaSonera to lease its ducts.*[62]

The experience of other countries is that general or symmetrical obligations do not replace the need for SMP remedies

5.65 An analogy can be drawn to the co-existence of general duct access obligations that apply to all operators and specific remedies mandated by national regulatory authorities to address

[60] Art 3(5).

[61] See PTS, *Consultation regarding the Markets for Local and Central Access* (28 October 2014) available at http://www.pts.se/sv/Dokument/Remisser/2014/Samrad-angaende-marknaderna-for-lokalt-och-centralt-tilltrade/.

[62] PTS, *Utkast till beslut om fastställande av företag med betydande inflytande på marknaden för lokalt tillträde till nätinfrastruktur (marknad 3a)* (28 October 2014) p 159, available at http://www.pts.se/upload/Remisser/2014/11-9306-utkast-beslut-lokalt-tilltrade.pdf.

SMP issues. These general obligations often appear in statute as part of the telecommunications law in various countries. They generally do not provide for the *ex ante* setting of terms and conditions of access and therefore bear considerable similarity to the EU Civil Infrastructure Directive. Consequently, various European and non-European regulators have determined that, while these general obligations may address certain national policy goals, they will not normally adequately serve the purpose of preventing a misuse of SMP.

5.66 For example:

(a) in Portugal, there is a symmetric obligation on all operators to provide duct access. However, the regulator has imposed additional obligations on the incumbent to address issues such as development of an automated mapping tool to assist other CPs to plan their network deployments in connection with duct access;[63]

(b) in Austria, the Telecommunications Act requires all operators to provide access to their ducts to other operators on request.[64] The regulator did not consider that this legislative regime was sufficient to address the incumbent's market power. It referred specifically to limitations such as: (i) the fact that the legislative regime could not require an operator to extend its network in response to a request and (ii) the fact that the legislative regime did not permit the regulator to set charges up-front, in order to reduce transaction costs and increase transparency. It therefore imposed both duct and dark fibre SMP remedies;[65] and

(c) in Australia, despite the general duct access obligations that apply to all operators which has led to significant demand for access to the incumbent's duct network, there have been significant complaints by CPs that the Australian Competition and Consumer Commission needs to set up front terms in order to facilitate more effective competition. In response, the Commission has agreed to consider in future 'the relevant terms and conditions for access (both price and non-price terms) that would apply to facilities' where they are acquired in connection with a regulated service.[66]

Implementation issues are better dealt with under the SMP framework

5.67 In light of the EU Civil Infrastructure Directive, it would appear that the introduction of duct access in the UK is inevitable. Accordingly, in our view, many of the implementation questions raised by Ofcom will need to be dealt with in the short to medium term. Delaying consideration of these issues now will only lead to more difficult implementation challenges down the track.

5.68 Our view is that it would be far preferable for these issues to be dealt with under the SMP framework. In particular, we note that:

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[63] Fatima Barros, ANACOM, *Next Generation Networks: Trends and Experiences in Portugal* (21 July 2014) available at http://www.regulatel.org/wordpress/wp-content/uploads/2014/09/lunes/Fatima_Barros.pdf.
[64] Telekommunikationsgesetz 2003 art 8.
[65] Telekom Kontrol Kommission, *Beschied M1.1/12 – 106* (16 December 2013) pp 103–4, available at https://www.rtr.at/de/tk/M1_1_12/30308_M_1.1_12_web.pdf.
[66] Australian Competition and Consumer Commission, *Public Inquiry into the Fixed Line Services Declarations: Final Report* (April 2014) p 60.

(a) the framework would give Ofcom stronger powers to tailor the duct access remedy in a way that best manages the challenges posed by BT's SMP. This is consistent with the approach in Portugal, for example, where additional duct access remedies were tailored for Portugal Telecom in light of its market position; and

(b) given the potential impact on pricing of other services, which Ofcom appears to be concerned by, we believe that Ofcom will be able to achieve a more coherent approach to pricing if access to BT's duct is priced under the same mechanisms and framework as its other regulated services. Indeed, this was precisely the reason why the Swedish regulator recently changed track by deciding that it would include passive access among its SMP remedies in market 6.

5.69 Accordingly, if anything, the impending implementation of the Directive in fact make it *more* important that Ofcom begin planning the form and shape of passive remedies that should apply to BT.

6. Other implementation issues

6.1 This section sets out our detailed assessment of each implementation issue raised by Ofcom in relation to passive remedies.

Issue 5: Can limitations be effectively enforced?

6.2 As noted above, Ofcom has expressed concern that limitations may be necessary to appropriately delineate the market, in order to avoid regulatory intervention in geographic areas or market segments that may be effectively competitive. Ofcom has also expressed the view that it would need to consider whether such limitations could be enforced and:

> *Where it is not possible to cost effectively monitor and police usage, e.g. where CPs may use the passive product to support services outside the regulated markets, we need to consider the extent to which this risks creating competitive distortions which undermine any potential benefits from the passive remedy in the SMP market(s).*[67]

6.3 As we have noted above, we do not consider that Ofcom is correct in assuming that such limitations are generally likely to be necessary or appropriate. However, even assuming that they were, we do not consider that there is any evidence that these limitations could not be enforced.

Enforcement of limitations in the UK

6.4 As we have noted in section 5 above, it is not clear whether limitations – separate from any applicable geographic limitation and a clear service description – would have any role to play in any use of passive access. However, we do not think there is any reason why geographic limitations and, assuming that Ofcom proceeds with imposing them, service description limitations, would be ineffective.

6.5 In the case of PIA, implementation brought with it a debate about what services might be delivered over facilities made available under the new rules. BT itself recognised that PIA might be used for a variety of purposes:

> *7.46 BT thought that in practice there may be difficulties in defining usage terms and conditions so that CPs would only be allowed to use PIA for the defined purposes. BT thought it might be necessary to seek our guidance or intervention, particularly if CPs subsequently decided to use fibre installed in BT ducts and poles for non-NGA purposes such as leased lines*.[68]

6.6 Ofcom's approach in 2010 was that:

> *7.62 In relation to policing usage, we acknowledge there may be some practical difficulties in preventing PIA from being used for leased lines. However, we think it should be possible for BT to define the PIA service in a way that limits, if not entirely*

[67] 2014 Discussion Paper, p 37.
[68] WLA Statement 2010.

excludes, uses that fall outside the scope of the remedy. This might include contractual provisions about usage, minimum contract terms and requirements to serve multiple premises or designated areas.[69]

6.7 If allowing BT to impose relevant contractual restrictions was an approach acceptable to Ofcom in the context of the wholesale local access market, it should be equally acceptable in relation to the business connectivity market.[70] We are not aware of any evidence that would lead Ofcom to change its position on the effectiveness of contractual restrictions.

6.8 Further, we understand that Openreach has processes in place to ensure that duct access is being used within the contractual limits imposed in its reference offer. For example, our understanding is that CPs are required to provide detailed plans for Openreach's verification prior to any installation taking place in ducts, any variations to those plans must be agreed with Openreach, and Openreach may audit or verify the installation. We are not aware of any concerns raised by BT that its use of contractual provisions has been ineffective (on the contrary, there is some risk that such contractual provisions may allow BT inappropriate and unnecessary levels of information about other CPs' access services). Nor can we identify any reason why these limitations would be any less effective for dark fibre than for duct access. Indeed, arguably the real risk here is quite the opposite: that additional processes and measures are insisted on by BT which are not necessary to protect its interests, but instead to either (i) obfuscate and delay CPs' ability to take advantage of any passive remedies; or (ii) obtain information about CPs' investment and rollout plans.

Limitations are effectively enforced in countries that impose such limitations

6.9 The common model for duct access in other countries involves a multistep process, with a combination of desktop studies, complete designs of the proposed installations, completion inspections undertaken by the duct owner and delivery of 'as built' documents prepared by the CP to the duct owner. While many countries (such as Australia) do not include limitations on the types of downstream services that are offered using passive remedies, those countries that do have such limitations have found that they can be effectively enforced.

6.10 The Analysis Mason report prepared for Ofcom in the NGA context, *Operational Models for Shared Duct Access*, provides a helpful summary of key operational aspects of duct access and the provisioning processes. For example, the report notes that:

(a) in Portugal, CPs are required to provide 'as built' designs within 30 days of completion of any work;

(b) in France, CPs must provide an 'end of works submission' to the duct owner, comprising the final order and any changes made during the works process; and

[69] WLA Statement 2010, p 112.

[70] Note that this statement is made without prejudice to the position of the authors, the PAG or any member of the PAG, including in relation to whether such contractual restrictions are appropriate.

(c) in Spain, CPs must prepare a detailed project plan prior to installation and detailed technical specifications of the installation following a joint survey.[71]

6.11 These type of provisioning processes enable the infrastructure owner to ensure that any access is within the scope of the SMP remedy. For example, in France, duct access is only available for access (and not backhaul) network segments. The provision of ordering documents and 'end of works submissions' effectively ensures that France Telecom has oversight over the use of its duct.

6.12 These reflect similar processes in other parts of the world. For example, in Australia, CPs seeking access to the incumbent operator's ducts are required to submit a study request, order form containing a detailed design and construction proposal, complete a joint inspection once installation is complete, and provide 'as built drawings' at completion of the installation.[72]

6.13 The processes tend to give the duct owner and operator substantial visibility of where equipment will be installed and therefore the ability to effectively 'police' the geographic location of the installation. We are not aware of any widespread concerns in any jurisdiction that CPs are failing to comply with the terms and conditions of duct access.

6.14 The effectiveness of limitations for dark fibre is just as strong since the scope of the access being sought will be immediately clear to the operator providing access.

Issue 6: The non-discrimination model

6.15 BT has established processes for providing duct and fibre access. Ofcom has previously expressed concern that the implementation of passive remedies in the business connectivity market may require BT to re-engineer many of its business processes, especially if an 'equivalence of inputs' ('EOI') standard is imposed. Ofcom has argued that this would increase costs and disruption, and make it harder to justify the introduction of such remedies. However, Ofcom has flagged an additional concern in relation to the relationship between different processes, in relation to passive remedies:

> *6.29 In considering whether to impose passive remedies, we would need to consider the appropriate form of non-discrimination obligation.*
>
> *…*
>
> *6.30 Non-discrimination obligations may take different forms:*
>
> - *Equivalence of Inputs (EOI) - a strict form of non-discrimination that requires BT to use exactly the same products and services as its competitors. The development, provision, maintenance and repair of access services are provided on the same timescales, terms and conditions (including price and service*

[71] Analysis Mason, *Operational Models for Shared Duct Access* (2010) p 3.
[72] See Telstra Wholesale, *Facilities – Duct Access*, available at http://www.telstrawholesale.com.au/products/facilities/duct-access/index.htm at 9 December 2014.

levels), by means of the same systems and transactional processes and by sharing the same information. Essentially, the inputs available to all CPs (including BT) would be provided on an equivalent basis.

- *No undue discrimination obligation - a less strict form of non-discrimination obligation which does not require BT to use exactly the same products and services as its competitors but instead requires it to ensure that any differences between the services it consumes and those it supplies to its competitors do not amount to undue discrimination. Generally we interpret this obligation in accordance with our guidelines of November 2005 on Undue discrimination by SMP providers (the Discrimination Guidelines).*

6.16 Ofcom has also noted that:

> *… there may be circumstances where although an EOI obligation applies; it may not be effective in preventing BT behaving in a manner which is not unduly discriminatory against third parties. If we were to impose a passive remedy, we would also need to consider whether it is appropriate to complement an EOI obligation with a no undue discrimination obligation to effectively address any potential concerns regarding BT's ability to discriminate between its passive and active products, particularly if it chose to consume one form above the other.*

6.17 Ofcom's concern therefore can be distilled down to the following points:

(a) the need to decide whether to require passive remedies to be provided on an EOI or ND basis; and

(b) the need to complement an EOI obligation with a non-discrimination obligation in relation to discrimination between BT's passive and active services.

6.18 It is outside the scope of this report to comment on what Ofcom should decide in relation to the non-discrimination model. We instead explain our view that the fact that it stands to be decided is not, in any sense, likely to be an obstacle to introducing passive access.

Non-discrimination models are well developed in the UK

6.19 Ofcom has been able to choose, swiftly and effectively, between different models of non-discrimination in other UK market reviews. Our expectation is that EOI would be a more effective outcome, which has been demonstrated to be achievable and workable in other countries (as noted below) and is consistent with the approach to passive remedies in the NGA Recommendation, which contemplates that it is feasible to deliver duct access on an EOI basis. We also note that delivering EOI for passive remedies could potentially allow for the provision of active remedies to be supplied by BT Wholesale in future. However, we do not consider that the mere need to decide which non-discrimination model to use should be unduly difficult to do in the business connectivity market review or be a reason not to impose passive remedies *per se*.

6.20 For example, as Ofcom itself notes in the extract from the 2014 Consultation Paper above, it has already had to determine a non-discrimination model in relation to each of the two broad categories of network access made available in previous business connectivity market reviews.

In the context of imposing a duct access remedy in the NGA context, Ofcom declined to impose an EOI obligation, noting that:

> *Whilst PIA may be a new product from the point of view of a CP customer, BT's own use of its duct and pole infrastructure has been extensive over many decades. We therefore, consider that BT would be required to significantly re-engineer its own internal processes and systems if it was required to use its duct and pole infrastructure on a completely equivalent basis. Therefore, we remain of the view that the specific form of non-discrimination obligation proposed for VULA would not be proportionate at this stage*.[73]

Instead, BT was required to produce a reference offer describing how the passive infrastructure service it provides to itself differs from the service provided to external CPs.

6.21 Assuming Ofcom wished to proceed on the same basis in relation to passive remedies in the BCMR context (and we do not comment on whether this is the correct approach), we see no reason why such an option would not be open. This would require little change from the existing arrangements for PIA since the product offering would be very similar.

6.22 More generally, Ofcom has a strategic framework, and set during the Strategic Review of Telecommunications and applied in subsequent market reviews. Ofcom's approach to determining whether EOI should be required is based on the principles that:

(a) EOI is 'the most effective form of non-discrimination', generating better incentives on BT to improve its wholesale products, increasing transparency, making compliance monitoring easier and requiring less ongoing intervention by Ofcom; but

(b) it is costly to introduce and therefore should not be applied where it would be disproportionate to do so.[74]

6.23 We do not foresee the application of this approach to passive remedies in business connectivity markets to give rise to any particularly novel or complex issues. In particular, we note that:

(a) BT already provides a duct access product and so estimating the costs to be incurred by BT if EOI is *not* required is relatively straightforward – Ofcom's proportionality assessment should be based on the costs of scaling and adapting BT's existing product;

(b) based on the work done in the wholesale local access market review, Ofcom has had no difficulty in assessing (at least at a general level) the cost of BT implementing EOI for duct access.

6.24 The outcome of the proportionality assessment may not necessarily be the same as in the wholesale local access market – particularly if Ofcom's view is that there is likely to be

[73] WLA Statement 2010, pp 116–7.
[74] See, eg, Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30* (3 July 2013) p 164.

significant eventual take-up of duct access in the business connectivity market and/or duct access in that market is likely to have a significant positive impact on competition.

6.25 In relation to dark fibre, the basis of the proportionality assessment will be the same. An important question here is whether the delivery of the form of network access is a 'legacy arrangement' where EOI provision would involve creating a new 'break point' in existing business processes. This is a question that has arisen each time Ofcom has introduced a new form of network access obligation and which it is able to address.

6.26 In relation to addressing the risk of BT discriminating in provision of its passive and active services, we note that issues of balancing the differential treatment of alternative upstream and downstream wholesale remedies were comprehensively considered by the Competition Commission in the Carphone Warehouse case (in the case of MPF and WLR).[75] Accordingly, Ofcom is familiar with the need to ensure the terms and conditions on which CPs can access those products are set proportionately, to avoid inefficient investment and distortion of competition. In relation to pricing, for example, Ofcom has set out that:

> *the relative prices of MPF and WLR/WLR+SMPF should give CPs an incentive to choose the wholesale service that minimises the total costs of providing downstream voice and broadband services. To ensure that the cost-minimising choice between these alternative wholesale inputs is made, the price differentials between (i) MPF and WLR and (ii) between MPF and WLR+SMPF should be equal to the absolute difference in their incremental costs*.[76]

6.27 Accordingly, Ofcom has previous experience addressing the issue of discrimination between the terms on which different and alternative wholesale services are offered. Such experience is, in our view, readily translatable to the concurrent regulation of passive and active products in the business connectivity market.

A range of non-discrimination models have been adopted for passive remedies in Europe

6.28 We have not seen any evidence that establishing a non-discrimination model has impaired the deployment of passive infrastructure access in any of the markets considered in this study. Our review has suggested that, although EOI has additional costs and would be expected to deliver superior outcomes for CPs, both EOI and 'lighter' forms of non-discrimination obligations are both workable models.

6.29 For example, in imposing a duct access obligation, the Spanish regulator elected not to impose an EOI obligation and instead required only that the quality of the services the incumbent provided to itself and to third parties needed to be equivalent.

[75] *The Carphone Warehouse Group plc v Office of Communications* (Case 1149/3/3/09, Determination, 31 August 2010).
[76] Ofcom, Fixed Access Market Reviews: Approach to Setting LLU and WLR Charge Controls (20 August 2013) p 23.

6.30 In comparison, in France, ARCEP imposed an obligation on France Telecom to provide access to civil infrastructure in respect of the local loop on a full EOI basis in 2008. ARCEP directed that France Telecom:

> *must particularly ensure that its operational processes and engineering rules are not discriminatory, including in relation to the rules and processes that France Telecom or its affiliates follow for deployment of broadband. Under the non-discrimination obligation, [France Telecom] must formalize and maintain protocols, technical conditions and internal transfer prices between its vertically integrated entities*.[77]

ARCEP concluded that it would be 'reasonable' for these processes to be the same processes used by France Telecom's competitors.[78]

6.31 In June 2014, ARCEP reaffirmed that decision, confirmed the intention was to impose EOI and considered that it was 'reasonable and proportionate' to continue to impose EOI.[79]

6.32 ARCEP's approach reflects article 13 and annex II of the NGA Recommendation, which provide that access to ducts should be provided on a 'strictly equivalent basis. NRAs should require the SMP operator to provide access to its civil engineering infrastructure under the same conditions to internal and to third-party access seekers'.

6.33 Accordingly, we consider that there are a range of options open to Ofcom to determine whether or not to impose EOI or a lesser form of non-discrimination. We see no reason, based on the differing approaches of other countries, why the mere fact that Ofcom must decide this issue should be a barrier to introduction of passive remedies.

Issue 7: Construction of new infrastructure

6.34 Ofcom noted in its Consultation Paper that '*a specific challenge for passive remedies concerns the arrangements for the construction of new infrastructure.*' Ofcom saw three distinct situations arising:

- '*congestion – where there is no spare capacity available, new infrastructure would need to be built. For example, additional fibres may need to be deployed to relieve a congested flexibility point or new duct may need to be constructed to relieve a congested section of duct;*

[77] ARCEP, Decision No 2008-0835 (24 July 2008) pp 78-79, available at http://www.arcep.fr/uploads/tx_gsavis/08-0835.pdf (France Telecom '*doit notamment veiller à ce que les processus opérationnels et les règles d'ingénierie ne soient pas discriminatoires, y compris par rapport aux règles et processus que France Télécom ou ses filiales suivent pour le déploiement du très haut débit. Au titre de l'obligation de non discrimination, France Télécom doit formaliser et tenir à jour, sous forme de protocoles, les conditions techniques et les prix de cessions internes pratiqués entre ses différentes entités verticalement intégrée.*')

[78] Ibid, p 57.

[79] ARCEP, Decision No 2014-0733 (26 June 2014) pp 117–8, available at http://www.arcep.fr/uploads/tx_gsavis/14-0733.pdf.

- *blockages and damage – where duct is blocked or damaged, remedial work (such as repair of a broken duct) would be needed to allow the duct to be used; and*

- *network extensions – at locations not currently served by BT, new ducts/poles and fibre would be required to provide service*'.

6.35 As Ofcom itself notes, these situations 'appear to be comparable with the situations where new infrastructure is required for wholesale leased lines.' In those markets, BT builds new infrastructure on request and charges for that work via Excess Construction Charges where the extension is specific to an individual customer (but not where the new infrastructure is in a common part of BT's network or is work to repair blockages and damage).

6.36 Ofcom's concern was that:

> *6.24 Given the need for passive remedies to coexist with active remedies, our initial view is that the new infrastructure arrangements adopted for passive remedies would need to be designed so as to:*
>
> - *Enable CPs to deliver comparable outcomes to wholesale leased lines and to compete effectively with them.*
>
> - *Satisfy any non-discrimination obligations that apply to the remedies. In practice this is likely to mean that BT would need to ensure that any differences in the arrangements would not be unduly discriminatory.*
>
> - *Minimise the risk that differences between the arrangements adopted for wholesale leased lines and passive remedies artificially incentivise CPs to use either type of remedy.*
>
> *6.25 In relation to the physical network components at least, a dark fibre remedy would be very similar to the wholesale leased lines remedy i.e. both involve a requirement to provide a fibre circuit between two locations. Given this, our initial view is that the most straightforward way to satisfy the design considerations listed above would likely be for the same arrangements to be used for wholesale leased lines and dark fibre.*

6.37 Thus, Ofcom's concerns can be condensed to the following points:

(a) new build will be required for congestion, damage and extensions; and

(b) non-discrimination obligations will apply to the different positions of those using active and passive remedies (as well as between those using passive remedies and BT's own business).

6.38 In relation to these concerns, we expect the construction of new dark fibre in response to a CP request would be practicable (the arrangements for doing so in relation to existing business connectivity services are already long-established) and we are not aware that Ofcom has

raised any concerns about construction of new dark fibre. As Ofcom notes, similar arrangements could be put in place for both dark fibre and leased lines.

6.39 Accordingly, this section primarily focuses on construction of new duct.

6.40 The scope of this report is not to determine the most appropriate solution for each of these issues, but simply to demonstrate that no aspect of new infrastructure construction is likely to be a 'deal-breaker', which could make the implementation of passive remedies in the business connectivity market impracticable.

Construction of new infrastructure in the UK

6.41 In Ofcom's 2014 Consultation Paper, it determined that there were several aspects of new duct infrastructure construction that needed to be considered, comprising:

(a) construction in areas where BT does not currently have duct infrastructure; and

(b) construction where BT does have duct infrastructure but it is congested, in order to build additional capacity for CPs; and

(c) requirements to conduct remediation where duct is blocked or damaged.[80]

6.42 These are all issues that have previously arisen in the context of Ofcom's WLA review. In that context, Ofcom raised a number of different options to manage these concerns:

Scenario	**Options**[81]
New build	• BT to install new duct • CP to install own duct • Developers or partnerships between CPs and developers Ofcom considered that there was no strong case for BT to construct new build except where agreed between BT and the CP
Decongestion / remediation	• CP to install own duct to bypass congestion • BT to repair unusable infrastructure (eg, collapsed duct) • BT to recover redundant cabling • BT to rearrange existing infrastructure • BT to install new duct Ofcom considered that BT should relieve congested infrastructure at the cost of the CP requesting such relief, but considered that BT could make a proposal in its draft reference offer for discussion with industry.

6.43 While we expect that proposals for developers to be involved in construction of new build are likely to be less relevant in respect of business connectivity solutions, we otherwise see no

[80] 2014 Discussion Paper, p 38.
[81] WLA 2010 Consultation Paper, p 119–21.

reason why the options previously proposed by Ofcom in relation to wholesale local access should be different in respect of business connectivity. A duct is simply a plastic pipe: except for the involvement of developers, there is little reason why arrangements for construction of new duct should be different as between residential and business services. BT does not have separate 'business connectivity' and 'residential' duct. Nor do we consider that the analysis of the options for new build are likely to be a barrier to the implementation of passive remedies.

6.44 Ofcom also previously considered where BT should be required to overbuild to accommodate potential future demand (on the basis that the costs for BT doing so are much less than for other CPs) but did not consider this to be an overall efficient approach. Ofcom has not raised this as a concern in the 2014 Consultation Paper but, in any event, unless there is evidence that a substantial proportion of BT's existing ducts likely to be usable for business connectivity purposes are already at capacity, we see no reason why the issue should be determinative of whether Ofcom should introduce a duct access remedy.

6.45 In relation to Ofcom's concern that it must '[m]inimise the risk that differences between the arrangements adopted for wholesale leased lines and passive remedies artificially incentivise CPs to use either type of remedy', presumably Ofcom's concern is that BT may provide service levels or ordering and provisioning processes for passive remedies that are so poor that CPs cannot replicate Openreach's active products.[82]

6.46 We firstly note that this does not appear to have been a concern in relation to the wholesale local access market. In its statement in relation to that market, Ofcom only imposed an obligation on BT to provide passive remedies on 'fair and reasonable terms'.[83] It is unclear why Ofcom considers that this is a distinct new issue that could make a passive remedy in the business connectivity market unworkable.

6.47 In managing service levels for LLU and WLR, Ofcom has already dealt with a similar issue. In December 2013, for example, Ofcom consulted on service levels for these services, noting that BT had claimed that:

> *the differential in repair timescales between WLR and MPF is a key issue for BT Retail. The longer Service Level 1 timescale offered as standard with WLR put BT Retail at a competitive disadvantage to CPs using MPF, it argued, which is offered with Service Level 2 as standard*.[84]

6.48 In response, Ofcom considered the relative prices associated with each service at their respective service levels, aiming to produce an approach that reflects the relative differences in costs as between different service level standards. There seems no reason why Ofcom could not adopt a similar approach in balancing service levels and pricing between duct access, dark

[82] We assume that Ofcom is satisfied with the service levels currently provided for active products and that there is no perverse concern that BT would begin providing materially *better* service levels for any product.
[83] FAA 12.2.
[84] Ofcom, *Fixed Access Market Reviews: Openreach quality of service and approach to setting LLU and WLR Charge Controls* (13 February 2014) p 45.

fibre and active remedies, in order to ensure that CPs face appropriate incentives that maximise efficiency in determining the appropriate level at which they wish to invest.

Construction of new infrastructure in other countries

6.49 The international experience demonstrates that there are a range of alternative options available in terms of construction of new build:

(a) In countries that rely on general access obligations independently of SMP, the general approach is that new build is not required and access is provided on an 'as is, where is' basis. For example, in Australia there is no requirement under the facilities access regime in Schedule 1 of the Telecommunications Act for an operator to expand or remediate its passive infrastructure, although CPs are required to provide access to such passive infrastructure in its existing state.

(b) Many countries that have imposed passive remedies under the SMP regime have set out the requirements for the incumbent to decongest or remediate ducts according to specified service levels. For example, in Spain, the incumbent is under a range of obligations where duct is full or broken, including provision of alternative duct routes where available (and, as a last resort, provision of dark fibre), expansion of capacity and requesting the incumbent to remove redundant cabling.[85]

(c) In some cases, new build obligations go further than Ofcom has contemplated. For example, as Ofcom has observed, '*Over-build requirements have been adopted in other EU member states, for example in France and Portugal, where SMP operators France Telecom and Portugal Telecom are required to reserve capacity for OCPs*'.[86]

6.50 Similarly, a range of alternative options have been adopted in Europe with respect to service levels. For example:

(a) in France, service levels do not generally apply to fault rectification;

(b) in Italy, service levels require rectification of faults within 30 calendar days as a general rule; and

(c) in Spain and Portugal, there are no service levels but the incumbent commits to assign a person to supervise the rectification works performed by the CP. In Portugal, the assigned person must attend within four hours and the CP is otherwise permitted to undertake the rectification work itself.

6.51 The Portuguese examples (depending on the service levels that applied to active remedies) might well entirely address Ofcom's concern to ensure non-discrimination between passive and active remedies, by permitting the CP to perform its own fault rectification.

6.52 Accordingly, we do not consider that the issues regarding remediation, construction of new ducts and service levels that have been raised by Ofcom are real impediments to the

[85] Comisión Nacional de los Mercantos y la Competencia, *Infrastructure Sharing for NGA Deployment* (22 September 2014) available at http://www.intt.tn/upload/files/Espagne.pdf.
[86] WLA 2010 Consultation Paper, p 120.

introduction of passive remedies in business connectivity markets. On the contrary, our research suggests that these issues have been dealt with in many other jurisdictions.

6.53 While those jurisdictions have come up with a number of alternative solutions (and we do not comment in this report on which of those solutions is likely to be most appropriate in the United Kingdom), the important point is that the very existence of the policy choice has not been used in any of the jurisdictions we have reviewed as a reason not to implement passive remedies.

Issue 8: Implementation periods

6.54 In its discussion paper, Ofcom note that 'there would be a need for an implementation period following the completion of the market review in March 2016' but that 'it is difficult at this stage to estimate how long this process would take'.[87]

6.55 We have not determined the appropriate implementation period – this will depend on a number of factors including the degree to which (i) existing duct access procedures and systems can be applied to the business connectivity market; and (ii) existing procedures and systems for Ethernet or similar services can be easily applied to dark fibre. We limit our comments here to observing that Ofcom has managed implementation of new remedies successfully in the past, and to noting that a range of European countries have also been able to set implementation periods.

Implementation periods in the UK would not need to be protracted but ongoing regulatory supervision may be necessary

Duct access

6.56 In its final statement on the WLA market, in which Ofcom first imposed a duct access remedy on BT, Ofcom provided approximately three months for BT to prepare its draft reference offer,[88] with a view to a product launch within eight months. We recognise that, prior to the final statement, BT had already agreed to provide the access and was in advanced discussions with access seekers about development of the reference offer.

6.57 However, given BT already has a duct access offering in place – and given that the market is likely to take some time to adapt to passive remedies – we consider it likely that a duct access offering in the business connectivity market could be implemented within a similar or shorter timeframe. Further, Ofcom's 2014 Consultation Paper has been released nearly 15 months before the estimated completion of Ofcom's market review. We expect that this would allow significant time for Ofcom to conduct further work into the implementation challenges and provide indications to the market of its likely final views.

Dark fibre

[87] 2014 Discussion Paper, p 40.

[88] The final statement was released on 7 October 2010. The statement provided that 'BT has to produce a draft reference offer ('RO') for duct and pole access by mid-January 2011, with a view to launching a product by the middle of that year'.

6.58 In our view, the only additional complexity that dark fibre offers over active remedies is the need for physical access to the fibre end points. Far less physical activity is required in BT ducts in order to deliver a dark fibre product. Accordingly, our view is that it should not be a particularly complex or difficult task for BT to design and implement a dark fibre product based on a combination of:

(a) a cut-down active Ethernet offering, minus the active elements; and

(b) access to BT infrastructure, to the extent necessary to install the active equipment.

6.59 In terms of timing, Vodafone submitted a statement of requirements for dark fibre in November 2014 (which we understand was rejected by Openreach in December 2014) meaning that there will be a period of 16 months between Openreach becoming aware of the industry demand for the product and the conclusion of Ofcom's market review.

Implementation periods for other services

6.60 Ofcom and Oftel have also been able to ensure new regulated services are delivered in a reasonable timeframe, having regard to the complexity and costs of developing these services. However, it is clear that Ofcom has often needed to be involved over a lengthy period of time to ensure that any initial solution is improved and rendered fit for commercial, high volume use over time. For example:

(a) in relation to carrier pre-selection ('CPS'), this was required by an EU Directive to be made available from 1 January 2000. BT's switches had no inherent capability to deliver CPS. In addition to seeking an extension for the UK to implement a solution, Oftel instituted arrangements whereby BT initially developed an 'interim' scheme[89] (which required the consumer to dial override codes). This was followed by development of a permanent solution, which was itself implemented in two parts: (i) Phase 1 for national and international calls was available from 12 December 2000 and (ii) Phase 2 enabling customers to choose different operators for their international, national, both international and national, or for all calls, was available from 12 December 2001.[90] Despite the technical complexities, Oftel was able to develop implementation procedures to ultimately ensure BT delivered the service as required;

(b) in relation to wholesale line rental ('WLR'), Oftel determined in its 2001-02 review of the fixed telephony market that BT had SMP for reasons that included its ability to provide bundled calls and access. In August 2002, Oftel modified BT's licence to require it to provide WLR, and BT delivered a basic solution (WLR1) in September 2002. This was soon followed by development of an enhanced WLR2 product. In both cases, input from various industry working groups and consistent regulatory oversight were necessary for successful delivery; and

[89] See *Determination under Condition 50A.7 of the licence of British Telecommunications PLC relating to 'Interim' Carrier Pre-selection* (November 2000).

[90] See Oftel, *Notice of proposed Carrier Pre Selection Determination* (13 May 2002) para 1.4.

(c) in relation to LLU, Oftel made a decision to require BT to supply the service in November 1999 following a 12-month consultation period. A licence condition requiring BT to implement the service was imposed in April 2000. Implementation involved a demand management process known as the Bow Wave process, to assist BT to manage the initial up-take period. However, it took a significant period of time for the service to be improved to a point where it is now the leading form of network access in the UK.

6.61 We consider that the implementation of passive remedies in the UK should be far less complex than the examples described above given the similarity between those remedies and existing BT products. However, based on past experience in the UK, supervision and monitoring is likely to be necessary to ensure BT launches the products in a reasonable and proportionate timeframe and that the products are 'fit for purpose'.

Implementation periods in other countries have been modest

6.62 Implementation periods for duct access across Europe appear to be relatively short, particularly in circumstances where (as with BT) some type of duct access product is already available.

6.63 For example:

(a) in Spain, in mandating access to duct for NGA purposes, the regulator provided a one month period for the incumbent to update its reference offer, given it already had a duct product in place;[91] and

(b) in Portugal, in mandating access to duct access, the regulator provided a 90 day period within which PT had to prepare and submit their reference offer (with a 30 day period following which that reference offer would enter into force).[92]

6.64 An important aspect of the implementation period in Portugal is that, as with the approach to developing remedies in the UK, the remedy has developed and been improved over time with regulatory and industry input and oversight – for example, the remedy was initially developed without an automated tool to provide duct network information, such that on-the-ground surveys were required in each case where a CP was considering duct access. Over time, the incumbent has developed additional automated processes which (based on anecdotal evidence) provide desktop information with such accuracy that in many cases ground surveys are not required at all.

6.65 The European examples demonstrate that it is unlikely that a long implementation period is justified. The success of the duct remedy in Portugal also suggests that the implementation period can also be shortened (so that CPs and their customers can more immediately enjoy the benefits of passive remedies) if the regulator is willing to provide ongoing attention to

[91] Comisión Nacional de los Mercados y la Competencia, *Análisis de Mercados - Revisiones Anteriores* (22 January 2009) section II.4.3.3.2.

[92] Anacom, *Decision on the Offer for Access to the PT Comunicações, S.A. Concessionaire Ducts* (17 July 2004), section 5, available at http://www.anacom.pt/render.jsp?contentId=421132&languageId=1#.VI8hkCusX4I.

ensure the incumbent continues its product development after the initial launch period, in order to improve the passive remedy over time.

6.66 In relation to dark fibre, in many cases this has been deployed as a subsidiary remedy (for example, dark fibre is available on a regulated basis only where there is a duct access remedy but appropriate duct is blocked or at capacity). The implementation periods in these cases have not varied as between the duct and dark fibre remedies. Accordingly, based on European experience, we do not consider that there is likely to be any justification for providing a longer implementation period for dark fibre.

Issue 9: Development and implementation costs

6.67 Ofcom has noted that introducing passive remedies in the business connectivity market would involve development and implementation costs, which Ofcom considers 'may be significant'.[93]

6.68 We understand that significant further work may be required to fully quantify these costs. However, we believe there is a real risk that these costs could be overstated by BT. Based on the existing products offered by BT and the international experience of developing and implementing passive remedies, we believe many of these costs could be relatively modest.

Recovery of development and implementation costs should not be significant in the UK

6.69 The issue of recovering development and implementation costs did not directly arise in the NGA context, as Ofcom imposed an obligation on BT for duct access on 'fair and reasonable terms, conditions and charges' rather than directly setting prices or non-price terms on an *ex ante* basis.[94]

6.70 In relation to duct access, the introduction of PIA has meant that, in our view, the scale of the costs of developing and implementing passive remedies is not likely to be as significant as Ofcom fears. The existence of this passive remedy means that BT already has in place the necessary processes or documentation for:

(a) ordering and provisioning (including the provision of information about duct locations, and methodologies to calculate capacity and usage; preparation of studies and review of designs; capacity reservation; and record updating);

(b) the technical specifications for cables and related equipment;

(c) billing;

(d) operations and maintenance; and

(e) physical access by CPs for surveying, installation and maintenance purposes (including accreditation requirements and other conditions for access).

6.71 In our view, the major areas where costs are likely to arise as a result of applying duct access to the business connectivity market are:

[93] 2014 Discussion Paper, p 40.
[94] Ofcom, *Review of the Wholesale Local Access Market* (7 October 2010), p 185.

(a) those where there is specific additional documentation required in respect of access for duct for backhaul purposes that is not required for access network purposes. In our view, this is likely to be limited to the preparation of additional documentation, e.g. to adapt the technical specifications to accommodate additional types of cables and equipment, rather than substantive changes to business processes; and

(b) from the additional volumes of duct to which access is likely to be sought. For example, BT's systems may be appropriate for low volumes of duct access but further investment may be required for the design and implementation of OSS/BSS systems to support higher volumes of duct access.

6.72 We do not believe these costs are likely to be significant. Furthermore, in relation to OSS/BSS systems, they are likely to be costs that would not necessarily need to be incurred upfront, but could be developed as and when demand for the duct access remedy justified investment in systems that could cope with the expected ordering levels.

6.73 In relation to dark fibre, we recognise that the costs could be more significant. However we would expect that any dark fibre product and related processes could be largely based on a combination of:

(a) BT's existing active leased line Ethernet products (including in relation to ordering and provisioning, billing and operations and maintenance); and

(b) the technical specifications and physical access procedures and related terms that apply to duct – to the extent that the product requires CPs to have physical access and to install their own infrastructure in BT duct.

6.74 Given dark fibre would be based on existing active products, we see no reason why Openreach's Equivalence Management Platform could not be updated to provide for this new product offering as part of its business as usual update schedule.

6.75 In relation to both duct and dark fibre, Ofcom could adapt the forecasting requirements that currently apply to duct access in the WLA context to assist BT to ensure that its capability to fulfil orders for passive infrastructure is commensurate with the demand for such infrastructure.[95] Further, there is no reason why the costs necessarily need to be recovered only from users of passive remedies. For example, Ofcom has allocated the costs of Test Access Matrices ('TAM') and certain other costs associated with LLU across all DSL lines even though they are used only by CPs acquiring MPF and not SMPF. It did so on the basis that all DSL customers would benefit from improved competition. Its decision to maintain this cost structure was upheld by the Competition Commission in its determinations regarding the 2012 WLR/LLU price controls.[96] Ofcom argued in that case that:

> *MPF's ability to compete with SMPF in the provision of broadband would be undermined were SMPF able to rely on WLR test services while MPF was required to set up a new*

[95] 2010 WLA Discussion Paper, p 125.
[96] Competition Commission, *References under Section 193 of the Communications Act 2003* (Cases 1193/3/3/12 and 1192/3/3/12, 27 March 2013) 7-32, para 7.158.

system. Thus the initial investment in TAMs was clearly a start-up cost. Since investment in TAMs was not made on a line-by-line basis, to have allocated all such costs to a nascent MPF service would have substantially distorted the cost of MPF providers' entry into that market.[97]

We believe there may be grounds to consider a similar approach to recovering costs of developing and implementing passive remedies.

Recovery of development and implementation costs in other countries

6.76 An example of a recurring issue in the development of duct access has been the availability of information concerning the nature, location and quality of the dominant operator's network assets (ducts and poles). However, different countries have shown that there are different ways to manage these types of development and implementation costs – much depends on the circumstances of the country concerned. For example:

(a) in Portugal, lack of knowledge by competitive operators as to the exact locations of ducts and the availability of space was a critical issue. Often, competitive operators could only establish that space was not available by making a request for duct access and having that request be rejected. This issue has now been overcome; as a result of the problem, Portugal Telecom is obliged to make available an infrastructure information system ('Extranet') showing the available ducts, their locations and associated facilities. Importantly, this system was developed over time and after access to duct was regulated and demand for duct access grew. A similar system is now in place in relation to duct access in Spain; and

(b) in Australia, the incumbent's ordering and provisioning process for ducts has always involved a need for physical inspection and potential rodding/roping to verify the duct's size and free capacity. This has been a necessity due to concerns about the reliability of the incumbent's records. However, these costs have not proven prohibitive for CPs, and Australia is commonly viewed as a jurisdiction where duct access has been a key input to delivering competitive services for business customers. This is similar to the process of ascertaining availability in France.

6.77 There is also a range of models available in terms of recovery of these costs. For example, in Spain, costs are incurred for making a duct access request and installation, and there is both a fixed cost for installation and a variable per-metre fee (regardless of the number of cables installed simultaneously). The various prices proposed by the incumbent were individually scrutinised and assessed by the regulator without any apparent difficulty, with the regulator making changes to the proposed prices to ensure they properly reflected costs.[98]

[97] Ibid para 7.84.

[98] Comisión Nacional de los Mercados y la Competencia, *Agreement which Approves the Decision Regarding the Analysis of the Offer for Access to Ducts and Junction Boxes of Telefónica de España, S.A. and their Adequacy to the Requisites of the Comisión del Mercado de las Telecomunicaciones (MTZ 2009/1223)* (19 November 2009) p 7, available at http://telecos.cnmc.es:8080/c/document_library/get_file?uuid=628f3a56-11e1-4fa3-85ce-7c7c982f707d&groupId=10138.

6.78 Further, the Spanish regulator imposed an initial limitation on the number of ducts to which access could be sought on a weekly basis. This allowed the incumbent to 'scale up' its offering over time. In response to significant demand for the product, the Spanish regulator recently extended this limitation to allow CPs to expand their orders three-fold.

6.79 In summary, countries such as Portugal and Spain which have developed automated systems to provide duct planning information and a more streamlined ordering and provisioning process have been demonstrably more successful than those that continue to rely largely on physical inspections and manual processing of applications. While these involve some development and implementation costs, regulators have found ways to identify and manage these costs so that the remedy is successful.

6.80 Similarly, in relation to dark fibre, a range of costing models have been used by regulators to enable the incumbent to recover its costs, including broad cost orientation obligations or specific LRIC-based pricing models.[99] Our understanding is that regulators and industry have not typically faced significant implementation and development concerns with the development of a dark fibre remedy.

[99] BEREC, *BEREC Report on the Implementation of the NGA-Recommendation* (October 2011) p 58.

7. Summary and conclusions

7.1 In our view, the introduction of duct and dark fibre access as SMP conditions in the business connectivity market is likely to lead to significant benefits for UK businesses and, in turn, their customers. We consider that duct and dark fibre are complementary remedies – such that the greatest improvement to competition will be enjoyed if all are available and with a broad scope for CPs to use them for innovative new services in the UK market.

7.2 Based on our review of Ofcom's past work, the UK and European regulatory framework, and the experience of other countries that have developed passive remedies, our conclusion is that the implementation issues faced by Ofcom:

(a) largely reflect issues it has successfully navigated in the past – and where there is no real evidence that the issues faced by Ofcom in this case are significantly more complex; and

(b) have been successfully addressed by other regulators – which has led to significant success in developing competition at the network layer elsewhere in Europe and beyond.

7.3 A summary of our conclusions in relation to each of the issues, and how those conclusions apply to duct and/or dark fibre specifically, is set out below.

#	Issue	Duct	Dark fibre
1.	**Duct and dark fibre are substitutable remedies**	Duct and dark fibre are complementary remedies, with different use cases. Concurrent regulation would be consistent with Ofcom's approach to passive remedies in the wholesale local access market, the approach of regulators elsewhere in Europe and the common regulatory framework.	
2.	**No evidence of demand**	It is not appropriate for Ofcom to require evidence of CPs' business cases for using passive remedies, or to suggest that dark fibre is sufficient without allowing CPs the opportunity to use duct access remedies.	Same as for duct. In addition, CPs representing a large proportion of those who purchase wholesale Ethernet services from Openreach have placed a SOR for dark fibre.
3.	**Usage limitations may undermine the benefits of passive remedies**	Restrictive service descriptions would not be necessary or consistent with the concept of technology neutrality and its application to passive remedies across Europe. Purposive limitations are of questionable lawfulness and would lead to odd results that would not be in the interests of UK consumers.	

#	Issue	Duct	Dark fibre
4.	**The EU Civil Infrastructure Directive may address the need for passive access**	The Directive is clearly not intended to replace or vitiate the need for specific remedies for SMP operators. The experience of other countries is that specific SMP remedies are necessary, regardless of whether symmetrical obligations apply. Further, Ofcom will be able to better manage the implementation and pricing challenges if duct access is regulated under the SMP framework rather than solely under a bespoke regime.	N/A – dark fibre is not within the scope of the Directive
5.	**Usage limits may be hard to enforce**	If Ofcom were to find that geographic or service description limitations were necessary, the ordering and provisioning process would allow Openreach to monitor these limits.	
6.	**The non-discrimination model needs to be determined**	A non-discrimination model of some description would be clearly necessary. Ofcom has a clear framework for and experience in determining when particular non-discrimination obligations should apply. Various options are used successfully to deliver passive remedies in other countries. We do not believe selecting the non-discrimination model in this case should be any more difficult than in previous cases where Ofcom has faced this question.	
7.	**Arrangements for new infrastructure need to be developed**	Ofcom has considered new infrastructure deployment in the wholesale local access market and those same solutions would generally appear to be viable for the business connectivity market. Ofcom has already considered the need to ensure service levels between different remedies provide efficient investment incentives.	We see no reason why the construction of new dark fibre would not be practicable (the arrangements for doing so in relation to existing business connectivity services are already well established).

#	Issue	Duct	Dark fibre
8.	**An implementation period would be required**	Ofcom has determined and managed implementation periods in the past. Given BT's existing duct access product, based on international experience we expect any implementation period should be modest.	Ofcom has determined and managed implementation periods in the past. BT is aware of demand for a dark fibre service and the regulated product can be developed from a combination of a cut-down Ethernet product and a physical access element. Again, based on international experience, we would not expect a lengthy implementation period to be required.
9.	**BT would need to recover development / implementation costs**	For the same reasons that a lengthy implementation period is unlikely to be necessary (ie, BT has a regulated duct access product and a dark fibre product can be adapted from existing active remedies), we believe implementation costs could be modest. Further, international experience shows that the costs can be minimised and/or expended as and when demand justifies.	

7.4 These findings lead us to conclude that passive remedies are a viable option for the UK, with implementation challenges no different to those that Ofcom (and other regulators) have addressed in the past. Moreover, they offer the potential for significant innovation and more effective competition in business connectivity markets – an outcome which will ultimately benefit all UK consumers.

Annex A: Table of potential concerns

#	Issue or concern	References
Concerns relating to demand for passive remedies		
1.	**Duct and dark fibre are substitutable remedies** Ofcom has suggested that it may consider regulating duct or dark fibre, rather than both concurrently. It has suggested that dark fibre offers many of the same benefits as duct access, has similar demand and has fewer implementation challenges	2014 Consultation Paper paras 1.20(a), 6.3–6.11
2.	**No evidence of demand** The 2013 BCMR Statement noted limited evidence that passive remedies will be used or will unlock new investment or innovation. This issue is not emphasised to the same extent in the 2014 Consultation Paper	2013 BCMR Statement paras 8.8, 8.100, 8.104, 8.125
3.	**Geographic and usage limitations may undermine the benefits of passive remedies** Ofcom appears concerns that geographic and usage limitations may be appropriate but that this may impact the usefulness of and demand for such remedies	2014 Consultation Paper paras 6.17, 6.20 2014 CFI para 1.33
4.	**The EU Civil Infrastructure Directive may address the need for passive access** Ofcom has suggested that the EU Civil Infrastructure Directive may offer an alternative to passive remedies	2014 Consultation Paper paras 3.7–11
Concerns relating to implementation		
5.	**Usage limits may be hard to enforce** If limitations on passive remedies cannot be policed (so as to limit its use to markets with SMP), Ofcom is concerned that competitive distortions could result	2014 Consultation Paper para 6.17
6.	**The non-discrimination model needs to be determined** Ofcom will need to decide whether BT will be required to acquire passive remedies on an equivalence of inputs basis, or whether a 'no undue discrimination' obligation may be more proportionate	2014 Consultation Paper para 6.32
7.	**Arrangements for new infrastructure need to be developed** Duct access would create questions about how BT should be required to build new infrastructure in response to congestion, damage and extensions	2014 Consultation Paper paras 6.25–6
8.	**An implementation period would be required** An implementation period would likely be required for BT to implement passive remedies	2014 Consultation Paper para 6.36 2013 Decision para 8.49
9.	**BT would need to recover development/implementation costs** Ofcom would need to consider how BT should have the opportunity to recover development and implementation costs	2014 Consultation Paper para 6.40

#	Issue or concern	References
Concerns relating to pricing *Note: These are not addressed in this report, but are included for completeness. Pricing issues are discussed in the accompanying Report prepared by Frontier Economics on the economic policy questions raised by passive access.*		
10.	**BT may increase its charges, including for other services** Ofcom appears concerned that, to ensure BT can recover its common costs, it would need to increase charges for other services if passive remedies reduced demand for high bandwidth leased line	2014 Consultation Paper paras 1.18, 2.15–6, 5.23–5 2013 BCMR Statement paras 8.15, 8.43–5, 8.84–5, 8.107
11.	**CPs may seek to invest based on differences in the pricing of passive and active remedies** Ofcom has suggested that it would be a negative outcome if CPs sought to invest in passive remedies, based on differences between pricing of passive and actives remedies, rather than for innovation purposes	2014 Consultation Paper paras 2.20, 7.4, 7.36–41 2014 CFI para 1.33
12.	**BT and other CPs' incentives to invest may be affected / existing investments may be stranded** Ofcom has noted the risk that the co-existence of passive and active remedies could result in inefficient investment signals	2014 Consultation Paper paras 1.19, 2.24, 5.2, 5.8 2013 BCMR Statement paras 8.15, 8.77–9, 8.93–4, 8.107
13.	**Pricing model would need to be determined** Ofcom will need to choose between various pricing options and these may require price rebalancing across BT's products	2014 Consultation Paper paras 7.7, 7.20, 7.25 2013 BCMR Statement paras 8.7, 8.43, 8.81–2

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Towerhouse LLP is a London based law firm and consultancy serving the regulated sectors of the economy including electronic communications, energy, postal services, water, healthcare and transport.

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David Stewart joined Towerhouse LLP as a partner in July 2013. David is a competition and regulatory lawyer with a career-long specialisation in telecommunications. He is also an experienced transactional lawyer, with specialist experience in relation to access and interconnection issues. During 2005 – 2013, David was a senior management team member at Ofcom. As Competition Policy Director, David led Ofcom's programme of fixed and mobile telecoms market reviews under the European Framework, including advising on mergers in the sector. As Director of Investigations, David led the UK's largest competition law enforcement programme at an economic regulator, and was responsible for enforcing consumer law and regulatory rules and resolving access and interconnection disputes.

In commercial life, David was Director of Public Policy and Regulatory Affairs at Energis (a top 3 UK telecoms operator) and Director of Legal and Regulatory Affairs for the international division of Cable & Wireless (then a multi-national FTSE100 company), advising the incumbent national telcos in 31 countries. He was previously a lawyer in private practice with Gilbert & Tobin and Minter Ellison.

Zach Meyers

Zach joined Towerhouse LLP in November 2014. Zach spent several years at one of the Asia-Pacific's largest law firms, where he advised Australia's telecommunications incumbent, Telstra, on telecommunications regulation and competition law. This included representing Telstra in its negotiations with the Australian Government's National Broadband Network company for a AUD 11bn infrastructure sharing and network migration deal. He has also consulted to the World Bank and a number of developing country governments on ICT law and policy reform throughout the Pacific. In 2013, he was recognised by Australia's *Lawyers Weekly* magazine as one of Australia's top three telecommunications, media and technology lawyers under 30. He most recently spent one year at one of New York's largest firms, advising on corporate governance and global commercial transactions.

Zach holds a Bachelor in Laws (First Class Hons), Bachelor of Arts, Diploma of Modern Languages (French) and Master of Public & International Law, each from the University of Melbourne, and a Graduate Diploma in Legal Practice from the College of Law.