Business Connectivity Market Review

Preliminary consultation on passive remedies

TalkTalk response

Non-confidential version

January 2015

1 Summary

1.1 TalkTalk is pleased to respond to this consultation on passive remedies as part of Ofcom's Business Connectivity Market Review ('BCMR') which covers leased lines for business and backhaul for LLU and mobile networks.

1.2 The business connectivity market, in the same way as much of the rest of the telecoms sector, is experiencing continued innovation and growth. In particular there is an on-going shift in demand from older technologies and lower bandwidths to newer technologies that offer much higher bandwidths at lower costs. As well as increased bandwidth, customers are demanding increased reliability as broadband and leased lines become more critical. It is essential that regulation keeps pace with these developments so that operators are able to better deliver the services that customers desire.

1.3 TalkTalk believes that there would be significant consumer benefits from BT providing a dark fibre product[1]. Such a product would (if properly regulated) increase competition and innovation, through exposing more of the value chain to competition and allowing CPs greater control of products than is possible using Openreach's active Ethernet products. The introduction of dark fibre will also reduce the price of high bandwidth circuits whose current high price is retarding the move to higher bandwidth services and particularly uptake of superfast broadband.

1.4 Ofcom has suggested that introducing passives creates a risk of arbitrage opportunities resulting in inefficient entry and an inability for BT to recover their common costs. Most of these risks do not arise in the case of introducing dark fibre since one dark fibre circuit can only substitute one active circuit (unlike duct access). The only scenario in which arbitrage could occur would be if BT chose not to rebalance its active prices and maintain its current pricing structure whereby the price premium for high bandwidth circuits is far higher than the underlying cost difference. There is no reason to assume that BT will not rebalance its prices in response to dark fibre being introduced and therefore there is no reason to assume that arbitrage will occur. Such rebalanced Ethernet prices would also almost certainly increase consumer welfare.

1.5 We principally confine our response to dark fibre (except where otherwise stated). We agree with Ofcom that dark fibre is *more* compelling than duct access for providing BCMR services – it delivers most of the innovation benefit, but with far lower fixed cost duplication, less risk regarding common cost recovery, arbitrage, and simpler methods for both implementation and use.

1.6 Our response is laid out as follows:

- Section 2 Objectives: discusses the overall objectives that should shape Ofcom's evaluation of the various options

[1] When we refer to dark fibre we mean the dark fibre circuit that underlies an active circuit. We are not referring to segments of dark fibre

- Section 3 Issues/Concerns: provides our view on the risks of arbitrage, inefficient entry and ability to recover common costs that Ofcom has raised
- Section 4 Benefits/Costs: describes our view of the benefits and costs of introducing dark fibre
- Section 5 Nature of Remedy: discusses various aspects of the remedy particularly price regulation and how non-discrimination should be ensured
- Section 6 Other issues: picks up on a number of other issues
- Section 7: summarises our answers to the questions contained in Ofcom's consultation

1.7 We discussed many of the issues raised in this consultation in our response to the call for inputs (submitted to Ofcom in May 2014). It is not clear that Ofcom has considered that response – it is not mentioned at all in Ofcom's consultation and Ofcom has said in some places that it has had no evidence on a particular topic when in fact evidence was provided in our May 2014 response. Accordingly, we have cross-referenced to our May 2014 response in a number of places (rather than repeating our response in full). We encourage Ofcom to refer to these cross-references and/or review our May 2014 response in full.

2 Objectives

2.1 Ofcom lays out its objectives for considering passive remedies as follows[2]:

> *In accordance with that [the EC regulatory framework], factors that are likely to be particularly relevant to our consideration of any passive remedies include:*
>
> • *economic efficiency, including incentives to invest and innovate;*
>
> • *effective competition among CPs;*
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> • *distributional effects on consumers;*
>
> • *commercial and regulatory consequences; and*
>
> • *the widespread availability of services throughout the United Kingdom.*

2.2 We broadly concur that these objectives are all relevant to some degree but would make the following comments.

2.3 Ofcom has not explained its view on the *relative* importance of these factors or the weight that it will attach to each objective when it 'balances' the different factors (§3.4). We think it would add greatly to transparency if Ofcom explains its view on the relative importance of the different factors and how it will weight them when deciding whether to introduce passives.

[2] §1.11 Business Connectivity Market Review: Preliminary consultation on passive remedies ("**Consultation**")

2.4 In our view, the first two objectives regarding efficiency and competition are the most important since they are most aligned with Ofcom's principal duty: "*It shall be the principal duty of Ofcom … to further the interests of consumers in relevant markets, where appropriate by promoting competition*"[3].

2.5 The other factors are of relatively minor importance – for example:

- we are not aware that Ofcom has considered distributional effects significant in any previous market review, and Ofcom has given no reasoning as to why distributional factors are more relevant in this case than in other reviews it has conducted;
- Ofcom's reference to commercial/regulatory consequences appears (based on how Ofcom describes later in the consultation (at §3.3) to be primarily about practicality issues and the level of administrative resource required to implement passive remedies. We consider that these resource implications can be taken into account in the overall assessment of efficiency, and do not merit separate consideration;
- widespread service availability has not figured in any material way in previous market reviews and anyway would not be threatened by introducing dark fibre, which should encourage services to be available on a more widespread, rather than less widespread, basis due to more effective competition[4].

2.6 Therefore, Ofcom should focus its analysis and its assessment on the impacts of introducing passive remedies on economic efficiency and effective competition, without being distracted by other issues of marginal importance.

3 Issues / concerns

3.1 Ofcom discusses at some length[5] three inter-related issues regarding passive remedies – namely:

- the potential for arbitrage and cherry picking to occur;
- the efficiency impacts of active price rebalancing; and,
- the manner in which common cost recovery is to be enabled.

3.2 We discuss these issues below. In the case of dark fibre, these issues arise due to the combination of two factors:

- BT price discriminates by operating a steep price gradient on active products (with very high relative prices, and therefore high common cost recovery, for

[3] Communications Act 2003 s3(1)
[4] Using a dark fibre product it will not be possible to 'cherry pick' low cost areas (which might leave BT to serve only higher cost areas) since the price of dark fibre will probably be nationally averaged
[5] In particular see §5.10-§5.28 and §7.36-§7.41

high bandwidth circuits[6]). A 10G circuit is priced about £22,000 more than 10M circuit despite the incremental cost difference only being about £700[7]

- If dark fibre was introduced it would (or, at least, should) be priced the same irrespective of bandwidth (see section 3.2 below)

3.3 If this structure of active and passive prices remained unchanged entrants would be incentivised to focus on high bandwidth circuits where the margin opportunity is highest[8] and, since BT's common cost recovery is highest on high bandwidth circuits, then BT would experience a reduction in its common cost recovery.

3.4 However, in practice BT would rebalance its active prices so that the active prices reflect the dark fibre price plus the cost of the active layer. BT has the incentive to rebalance prices (to maintain/increase profits of both Openreach and BT Business / Global Services) and is able to rebalance its active prices since there are no constraints on the structure of its prices[9]. Rebalancing will have a number of positive effects:

- Remove the arbitrage opportunity thereby removing any incentive for inefficient entry and ensuring that competition is based on the merits
- Removing any threat to common cost recovery since BT will recover the same amount of common costs whether a circuit is sold as dark fibre circuit or as an active circuit

3.5 Ofcom seems to accept that BT will rebalance its active prices:

> *In response, it is likely that BT would need to rebalance its tariffs in the way that would best meet the challenge of the competitor using passive access targeting high value customers*. (§2.16)

3.6 Ofcom's analysis and assessment must reflect BT's natural and realistic response to competition. In places Ofcom seems to assume that BT will not rebalance prices (e.g. §7.21). To adopt this assumption would be an error on Ofcom's part. Assessing the impacts of dark fibre based on an assumption that BT acts irrationally by not rebalancing active prices will result in an unrealistic and incorrect assessment.

3.1 Arbitrage / cherry picking

3.7 Ofcom highlights that arbitrage (alternatively called cherry picking) could lead to distorted competition (i.e. not on the merits) and inefficient entry. We think that

[6] For example, 10Mbps price: £1,870, common cost recovery £906. 10Gbps price £24,000, common cost recovery £22,344. Incremental cost difference is about £700. See TalkTalk's response to BCMR Call for Inputs May 2014 Figure 1 ("**TalkTalk CFI Response**").

[7] See Figure 1 TalkTalk CFI response

[8] By margin we mean difference between dark fibre wholesale price plus active equipment cost and active/Ethernet price

[9] For instance, BT has flexibility to rebalance prices of different bandwidths and / or in different geographic areas. The only small constraint might be a sub-cap though Ofcom can change or lift this when it sets the next charge control

there are three quite different forms of entry and arbitrage potentially at play in this case. It is important to distinguish them since their incidence and economic impacts differ. We do not use the word 'arbitrage' to describe these since – as we explain below – they are not all forms of entry that are negative or pejorative as the word 'arbitrage' might suggest.

3.8 The three types are:

- The first type of entry may occur due to BT's chosen pattern of common cost recovery. For instance, if dark fibre was priced at the same (average) cost irrespective of downstream use and BT maintained a steep price gradient for active products (implying high common cost recovery on high bandwidth products) this would create large margins for high bandwidth products that would attract entrants. We refer to this as **type 1 entry**.
- The second type of entry may arise because BT has chosen to average its active prices in some way (for instance across different geographic areas with different underlying incremental costs) so that entrants can take advantage of active prices being higher than *incremental* costs in those areas. We refer to this as **type 2 entry**.
- The third type is where an entrant purchases one unit of passive product (e.g. a sub-duct) but can serve multiple units of active products. In this case, an entrant could exploit the opportunity to add additional customers at a low marginal passive cost. We refer to this as **type 3 entry**. The third type is what Ofcom seems to refer to this as 'density based arbitrage' (§7.38ff).

3.9 We do not think, in the case of dark fibre, any of these forms of entry is likely to create any problems (though for different reasons).

3.1.1 Type 1 entry

3.10 With regard to type 1 entry, BT has the incentive to and ability to remove the arbitrage opportunity by rebalancing its active prices (as discussed at §3.4). There is no sound reason for Ofcom to believe that BT will not rebalance prices. Therefore, we do not consider that this arbitrage would occur in practice, as BT would prevent it in the course of protecting its commercial interests. It is therefore not relevant whether type 1 entry would create any problems if it happened (as it will not occur).

3.1.2 Type 2 entry

3.11 We do not consider that type 2 entry leads to inefficiencies for dark fibre. We explain why below.

3.12 Type 2 entry is conceivable in the case of duct access. For instance:

- an entrant could focus on using duct access for short lines (where the active prices are the same irrespective of length[10]); or,
- an entrant may focus on using duct access in areas where the unit passive cost is lower (due, say, to high utilisation of passive) or the unit active layer cost is lower.

3.13 In these cases, the arbitrage opportunity arises because BT has chosen to price active products uniformly (e.g. same across different geographic areas) despite significantly different *incremental* costs (driven by differences in utilisation) and by doing so is operating a cross-subsidy[11] between different geographic reasons. Type 2 entry is different to type 1 entry since the entry opportunity is not a result of BT's chosen pattern of common cost recovery but rather because active prices do not reflect the different incremental costs[12].

3.14 Type 2 entry is generally efficiency-enhancing since it ensures that prices are more aligned with incremental costs (i.e. more cost reflective) which improves allocative efficiency. So, for instance, if customers in lower cost areas pay prices that are higher than their incremental cost plus an appropriate share of common costs then this supresses demand and is inefficient. Type 2 entry is common across telecoms and, as far as we understand Ofcom has not raised concerns about it causing inefficiencies in a range of markets. For example:

- BCMR (entrants focus on WECLA and high density routes)
- WLA/WBA (entrants/unbundling focus on larger exchanges)
- Virgin (focus on urban areas)

3.15 BT can, if it wishes, respond[13] competitively to type 2 entry by de-averaging its active prices[14] so they more properly reflect the underlying costs – for example:

- Lower prices in higher density areas where unit duct / active layer costs are lower
- Lower prices for shorter circuits

3.16 Such price de-averaging would unequivocally improve allocative efficiency since BT's prices would better aligned with underlying costs. BT has de-averaged prices in

[10] There is some differentiation of active prices by region and line length. For instance, there are different prices in the WECLA area and there are EAD has 'extended reach' price options and EAD has three bands for different regions. See Openreach price list

[11] Presuming BT is earning a normal rate of return

[12] There is very little common cost *between* different geographic regions (i.e. little cost is shared between regions). The current geographically averaged prices do not in general reflect different levels of common cost recovery in different regions – rather they reflect a misalignment of incremental costs in a geographic area and active prices in that geographic area.

[13] The only case where BT could not de-average its prices to reflect underlying costs would be if the incumbent has a universal service obligation (including a uniform price obligation) that might become unsustainable. We are not aware of any such relevant obligation for BCMR services

[14] Cherry picking could also result if dark fibre was priced differently in geographic areas but the active price was the same

response to competition in other markets e.g. WBA (Markets 2 and 3), BCMR (WECLA area).

3.17 Type 2 entry is unlikely in the case of dark fibre since:

- There is no possibility of an entrant exploiting a high utilisation level since:
  - the dark fibre price can be set to mirror the active pricing structure e.g. same price irrespective of circuit length in most cases and same price irrespective of region
  - multiple active circuits cannot be substituted by a single dark fibre since there is a one-to-one correspondence between an active product and a dark fibre product [15]
- The costs of the active layer do not vary materially between geographic areas
- The price of dark fibre can be set on a per circuit basis (rather than per metre) removing the possibility of entrants focussing on shorter circuits[16].

3.18 Therefore, in respect of dark fibre we do not think that type 2 entry results in any material potential inefficiency.

3.1.3 Type 3 entry

3.19 Type 3 entry is different to the other two forms. For the purposes of illustration imagine that the unit cost of duct and the utilisation of duct is uniform in all areas. A rival could enter the market by purchasing duct access (say the charges for one sub-duct which can carry many fibres are 20% of the total duct cost) but because the sub-duct has very high capacity, the entrant could provide active services to 50% of the market. If this occurred, BT would be unable to recover its costs. An entrant would effectively be taking advantage of the ability of a unit of duct access to provide many active circuits.

3.20 This type of entry cannot occur for dark fibre since a dark fibre can only be used to provide a single active circuit – see §3.17 above.

3.1.4 Summary of arbitrage issues

3.21 In summary, we do not think that in the case of dark fibre any of these types of arbitrage would result in efficiency:

[15] A dark fibre circuit could only substitute multiple active circuits if there were two circuits that shared exactly the same start and end points (e.g. from office A to exchange B). For all our use we do not envisage this situation occurring since each active circuit we purchase has different start/end points. Thus we do not agree with Ofcom that there will be situations where a CP could serve circuits over a single fibre (see §7.40). Even if there was substitution of multiple active circuits by a single dark fibre circuit there would be no threat to BT's common cost recovery since the charge control could be set to reflect that the number of fibres used would very slightly reduce as a result of introducing passive resulting in a higher dark fibre unit price

[16] Alternatively if dark fibre were set on a per metre basis then active prices could be set in this way too

- BT can and will avoid type 1 entry by rebalancing its active prices to lower the price of higher bandwidth products
- Type 2 entry cannot occur to any material degree for dark fibre since dark fibre will be priced in a manner (e.g. per circuit, geographically uniform) which will avoid arbitrage opportunities and also because a dark fibre circuit can only be used to provide a single active circuit
- Type 3 entry cannot occur to any material degree for dark fibre since a dark fibre circuit can only be used to provide a single active circuit

3.2 Efficiency of active price rebalancing

3.22 One pertinent issue relevant to introducing passive remedies is whether the active price rebalancing caused by introducing dark fibre will result in a more efficient or less efficient price structure and pattern of common cost recovery.

3.23 In its consultation Ofcom seems to be of a view that the current price discrimination with a high price gradient and far greater common cost recovery from high bandwidth circuits is efficient since BT has benevolently used the flexibility it is granted to set an efficient price structure (presumably Ofcom thinks BT is setting Ramsey-like prices[17]). Ofcom says:

> *At this stage, we do not have any evidence to suggest that the current pricing structure for leased lines (and therefore the bandwidth gradient) which has resulted from this flexibility is inefficient.* (§4.31)
>
> *In the 2013 BCMR, we did not identify any strategic incentives on Openreach to price the different bandwidth products in an unduly discriminatory and/or anti-competitive way. We also noted that the bandwidth gradient could be an efficient way to recover common costs.* (§5.15)[18]

3.24 Ofcom's preliminary conclusion in our view not correct. Furthermore, the way in which Ofcom has reached its conclusion is somewhat disappointing.

3.25 Whilst giving flexibility to BT could result in them price discriminating in a welfare enhancing way, Ofcom has provided no positive evidence that the current pricing gradient is welfare enhancing since it has ignored the incentives on BT. Whilst under certain, specific conditions, a regulated monopolist would have incentives to price discriminate in a Ramsey way which maximised overall end user demand, and

[17] Ramsey pricing is the approach whereby more common costs are recovered from products whose demand is less elastic which can be efficient (the improvement in efficiency is an increase in allocative efficiency) as there is a smaller volume reduction effect (which reduces efficiency) from less elastic products

[18] In the 2013 BCMR at §8.91 Ofcom said: "*In using the flexibility BT has in choosing how to recover its common costs within the constraints of our price controls, BT is not explicitly required to set Ramsey prices. However, in our view, BT is likely to know broadly how changes in prices affect demand for its products, and is likely to have better knowledge of this than we have. In using this knowledge to maximise its profits under the constraints of the price controls, we consider that BT is likely to achieve outcomes consistent with economic efficiency*"

hence allocative efficiency and welfare, in this case BT appears to have neither the incentive nor the ability to price discriminate in this fashion.

3.26 TalkTalk and Vodafone/Frontier in their responses to the Call for Inputs (submitted in May/June 2014) both provided clear reasons and evidence that the pricing gradient was, or was highly likely to be, inefficient. In particular:

- 25 times more common cost is recovered from 10Gbps circuits than from 10M circuits – see TalkTalk CFI Response §2.12ff for calculations. This would only be efficient if the price elasticity of 10Mbps products (at the retail level) was 25 times that of 10Gbps which is implausible (and no market wide elasticity evidence[19] is provided to support such a contention);
- The current pricing structure might be efficient if BT's only profit-maximising motive was to set Ramsey prices and BT had the necessary evidence to implement Ramsey-prices. However, neither of these is true:
  - BT plainly has other profit maximising motives when setting prices – for example, a high price gradient allows BT to: increase profits by raising the prices of unregulated MISBO products which increases profits; and exploit the charge control mechanism[20]
  - There is no evidence whatsoever that Openreach has researched the detailed industry wide retail elasticity and usage data it would need to implement Ramsey prices and there is no evidence that they have tried to derive Ramsey prices
- There are no effective regulatory constraints on such 'strategic' pricing. The sub-caps (discussed at §5.14) that Ofcom have imposed only slow the rate at which prices change they do not prevent anti-competitive prices or price structures.

3.27 In its consultation, Ofcom has not even referred to the evidence presented by TalkTalk/Vodafone/ Frontier, let alone discussed its strength and relevance.

3.28 We also consider that – as a matter of principle – it is inappropriate for Ofcom to presume (as it has) that BT's pricing structure is economically efficient unless BT is proven wrong. This effectively places the burden of proof on other stakeholders to prove that BT's pricing is inefficient – even where such pricing is *a priori* so unlikely to be efficient – rather than requiring BT to prove that its prices are efficient. This effectively gifts BT the regulator's margin of discretion to BT.

3.29 Ofcom previously adopted a similar approach with respect to cost allocations in the RFS whereby it gifted BT the regulators margin of discretion by assuming that the allocations BT used were efficient unless proven inefficient. However, Ofcom will in

[19] The relevant demand elasticities are market wide and not the demand elasticity that BT faces which will be influenced by competition. We are not aware of Openreach (who set Ethernet prices) having conducted any research into market wide elasticities

[20] see TalkTalk CFI Response §2.23. Other profit maximizing reasons that effect pricing structure include: pricing high where competition is weak; pricing high on products used more externally.

future[21] take more control of the allocations and take away BT's discretion since it recognises that BT will abuse any flexibility and discretion it has for its own self-serving interests.

3.30 Ofcom must adopt the same approach and principle here – it should only presume that BT's pricing is efficient if BT proves it.

3.31 We think that the introduction of dark fibre remedies will lead to an improvement in allocative efficiency. We offered to Ofcom a model that demonstrates this in our response to the CFI in May 2014[22]. If Ofcom wishes to conclude that introducing dark fibre remedies will result in less efficient pricing then it should provide robust evidence and reasoning to support its position on this matter rather than rather unwisely assuming that BT will use the flexibility gifted to it to price discriminate in a welfare enhancing manner.

3.3 Common cost recovery

3.32 It is economically efficient that BT should be able to recover its (efficiently incurred) common costs through regulated charges. However, whilst it is important that BT can recover its common costs there is no particular benefit from allowing BT to maintain any particular pattern of common cost recovery[23].

3.33 Entry using passives could impact on BT's common cost recovery since under its current chosen pricing structure BT recovers more common cost from high bandwidth circuits that will be the focus for entrants.

3.34 Ofcom articulates the potential impact on BT's common cost recovery from the introduction of passive remedies using some '*illustrative*' scenarios which show a reduction in common cost recovery of £70m to £155m. We think the scenarios it presents are far from illustrative and are, on the contrary, highly unrealistic and misleading (certainly for the case of dark fibre).

- First, although the scenario is supposed to reflect the impact of introducing passive remedies, it does not assume any common cost recovery from passive products. This is logically incoherent since the reduction in active volumes will be caused by an increase in passive volumes and passive products will include an allocation of common costs.
- Second, it does not reflect that BT will rebalance its active prices. BT will be able to maintain the same level of common cost recovery by rebalancing its active prices so that a similar amount of common duct cost is recovered from each dark fibre circuit and each active circuit. This will mean that if dark fibre is used BT's common cost recovery will be broadly unchanged.

[21] For example, Regulatory Financial Reporting Final Statement May 2014 §1.11, §2.91
[22] §2.31 TalkTalk CFI Response
[23] Unless a particular pattern of common cost recovery is clearly shown to be efficient

3.35 Therefore this scenario is highly unrealistic, and directly contrary to BT's commercial incentives and future behaviour.

3.36 Ofcom then goes on to assess the price rises that would be required if these common costs were recovered from other products (in one case active leased lines and in the other case non-leased lines that use the same ducts e.g. MPF/WLR – see §5.25ff). These scenarios are also highly flawed:

- As described above, the reduction in common cost recovery will be a fraction of what Ofcom suggests. If Ofcom are to look at price rises in this manner, it should base its estimates on a realistic market outcome.
- Assuming that BT continues with its current cost attribution methodology in its RFS[24], it is not possible for the common duct cost recovery from MPF/WLR to increase since the allocation as between Ethernet and MPF/WLR is based on cross-sectional area of the fibre cable versus copper cable and the introduction of dark fibre remedies will not result in any material change in the cross-sections. Ofcom has not explained the mechanism by which a reduction in common recovery from leased lines would result in higher common cost recovery from non-leased line products. TalkTalk cannot conceive of such a mechanism based on the current cost attribution methodology.

3.4 Summary of arbitrage, rebalancing and common cost recovery issues

3.37 In summary we do not consider that the risk of arbitrage, in efficient entry, inability to recover common costs and/or less efficient pricing structures will arise, in the case of dark fibre.

- Dark fibre pricing will be priced the same irrespective of bandwidth attracting entrants to focus on proving higher margin high bandwidth services
- BT will as a natural commercial response rebalance its prices so that the margin is similar across all bandwidths. This will remove any arbitrage opportunity (which we refer to as type 1 entry) and allow BT to maintain the same level of common cost recovery
- Such price rebalancing will almost certainly be more efficient
- There are two other forms of entry that raise arbitrage risks (type 2 and type 3 entry) – however, neither is feasible to any material degree with dark fibre

[24] See Detailed Attribution methodology 2014 p126. The actual assumptions used are based on a 1997 survey with updates

4 Benefits and costs

4.1 Ofcom discusses a number of the other benefits and costs of introducing passive remedies (aside of the ones discussed above). We comment on these below focussing on the benefits and costs resulting from the introduction of dark fibre.

4.1 Benefits

4.2 We agree with many of the benefits that Ofcom has outlined though we consider that Ofcom has overlooked some and/or underplayed the advantages.

4.1.1 Overall impact of competition

4.3 It is axiomatic that firms in competitive markets are more efficient than monopolists. The relentless and existential threat of entry and exit that is embodied in the competitive process forces all suppliers to improve their business to ensure that they are producing at the most efficient level. The Darwinian nature of competition ensures that suppliers who offer a poor service (in terms of high costs/prices, low quality and/or unattractive propositions) are forced to exit the market as customers switch to providers offering better quality services. Absent the burden of having to compete for customers, firms are less incentivised to reduce costs, offer high quality products and/or innovate.

4.4 By contrast monopolists, insulated from the burden of competition need not worry that inefficiency will force their exit.

4.5 Therefore, as a matter of principle we think Ofcom would be correct to presume that the outcomes for consumers will be better under competition that passive allows (albeit that such a presumption is rebuttable). Whilst it is not possible at the outset to predict the specific benefits that will flow from competition, theory and history show conclusively that benefits from competition are significant.

4.1.2 Innovation

4.6 Ofcom discusses what innovations might occur. We make a number of comments on this below.

4.7 Firstly, we do not consider that Ofcom needs to identify specific innovations that will occur as a result of passive remedies but rather that there are potential innovations that *could* be brought to market earlier by introducing dark fibre. Any reliance on specific innovations inevitably involve speculating on CPs' commercial strategies and market outcomes.

4.8 As a general matter allowing competitors to innovate (we refer to this as 'self-innovation') will unequivocally result in more and earlier innovation[25]:

- Through self-innovation rivals are able to gain first mover advantage and so there will be stronger incentives to innovate. No CP is able to enjoy a first mover advantage when Openreach innovates since Openreach is obliged to provide access to the innovation at the same time to all CPs (under EOI rules). This spoils one of the key incentives to innovate
- Self-innovation avoids coordination and transaction costs (as between Openreach and CPs) thereby allowing more innovation
- Openreach may, for a variety of reasons, reject requested innovations that would be pursued by competitors (if competitors were able to self-innovate). For example: may not be positive case for Openreach; may not fit Openreach's operating model, systems or vendor capabilities; Openreach are resource constrained; Openreach is more risk averse (and arguably culturally resistant to change)
- Having competition for innovation will increase the pressure on Openreach to innovate more and more quickly – currently there is no penalty to not innovating

4.9 In respect of particular innovations Ofcom has focussed on technology innovations. There are other types of innovations that Ofcom appear to have overlooked:

- new pricing structures and pricing innovations[26] such as: usage based tariffs; burstable speeds; 'pre-upgrade'[27]; different contract terms; different minimum term; balance of connection and rental[28].
- process and quality innovations[29] such as lower fault rate and/or more rapid repair of faults in active equipment through for instance: more reliable equipment; better monitoring and proactive maintenance; hot standby; better fault handling; more engineers; added resilience. These benefits could be significant since, according to BT[30], the majority if faults on active circuits occur in the active layer. These innovations could be supported through stronger SLAs and SLGs

4.1.3 Productive efficiency

4.10 Ofcom discusses productive efficiency (at §4.26 to §4.32). This focuses on merits based competition driving reduced costs and the risk of inefficiency due to arbitrage opportunities. We have a number of comments on this:

[25] See TalkTalk response to CFI May 2014 §2.37
[26] See TalkTalk response to CFI May 2014 §2.35
[27] Where a customer is provided with a 10Gb circuit but charged for a period of time for a 1Gb circuit
[28] These become more possible since competitors incur the fixed cost of the electronics rather than a prescribed structure of charges by Openreach
[29] see TalkTalk response to CFI May 2014 §2.35
[30] BT note in their response that 65% of reported faults are in the active layer (BT response §91)

- We agree that competition will drive reduced costs. Entrants may well be able to lower overall costs by operating more efficiently that BT – this may come through lower cost equipment or lower cost installation and repair or innovations that allow lower cost e.g. improved fault monitoring
- Cost minimisation incentives on BT (in the active layer) will be stronger with dark fibre remedies than without. Although a charge control creates some cost minimisation incentives (see §4.29), these incentives are weakened by the fact that cost reductions are in time passed through in lower charges, and are not able to be retained by BT. In contrast, if dark fibre remedies are introduced the cost minimisation incentive will be 'higher powered' since the operator will in effect retain the benefits of any cost reductions into perpetuity (whether through higher profits or higher volumes).
- The introduction of dark fibre will result in less duplication of fixed cost. Use of BT's dark fibre will only cause a minor level of duplication of active layer costs (since the vast majority of costs are variable). This is likely to be more than offset by there being less self-build (of duct/fibre) which involves substantial fixed costs.
- Cost savings are possible since a CP can integrate its existing equipment with the active layer equipment (e.g. Ethernet and lighting fibre).

4.1.4 Other benefits

4.11 We describe below a number of other benefits of dark fibre.

4.12 Ofcom has overlooked the economic benefit that with dark fibre, prices will be rebalanced to reflect cost and so customers will make better and more efficient choices of bandwidth. In particular in the case of broadband providers (based on LLU) they will be able to offer more attractive products by using higher bandwidths. Broadband which is experiencing bandwidth demand increases of about 50% a year is currently retarded by the current Ethernet pricing structure which artificially deters capacity upgrades even though the underlying cost is low.

4.13 There will probably be an improvement in demand – see §2.29 TalkTalk CFI Response. There are a variety of effects that will both increase demand and reduce demand but overall we consider that demand will increase.

4.14 Ofcom notes (§4.9) that dark fibre remedies would not effectively address all of the quality concerns since most provisioning problems do not relate to the active layer. However, this ignores that the majority of faults occur in the active layer (see footnote 30) and so significant quality benefits may happen here. Further, there will be *some* quality benefits in provisioning from introducing dark fibre remedies.

4.15 Passive remedies will reduce the opportunity for BT to engage in anti-competitive price discrimination such as focusing price rises on products used more by external

customers and gaming the current year weighting method that is used to monitor charge control compliance[31].

4.16 Introducing dark fibre has the potential in the medium- to long-term to reduce certain costs of regulation if active products become unregulated. Regulation imposes costs such as the direct costs on the regulator and regulated firms of implementing regulations as well as wider economic costs associated with unintended regulatory failures. Regulation of active products (compared to passive) is complex and can increase scope for regulatory error (due for instance to poor forecasting). The wide variety and constant innovation in active services results in Ofcom being involved in detailed and prescriptive regulation on an ex ante basis and leads to complex disputes on an ex post basis. For example charge control design is complicated by the inclusion or exclusion of services which are partial substitutes on both the supply and demand side in the coverage of the charge control. The forecasting of revenues and costs is also challenging due to the migration between services and the introduction of new services. In contrast, dark fibre, which has a limited number of variants, is far less complex and so is less costly to design and enforce and less prone to error. It will also be more stable and predictable.

4.2 Costs/risks

4.17 With regard to the costs and risks of introducing passive remedies that Ofcom outlines in its consultation paper, we have the following comments. In general we think that in the case of dark fibre, most of the costs outlined are over-stated since they either do not exist and/or are small.

4.2.1 Impact of self-build

4.18 Ofcom seems to suggest that a downside of introducing dark fibre is that it will discourage self-build (§2.24, §5.2). We do not think that a reduction in self-build as a result of introducing dark fibre would be a 'bad thing' or be inefficient. Currently operators only have the option of self-build or active. If dark fibre products are introduced then operators have additional options to serve customer demand and they will be able to select the most appropriate and efficient option to meet customer needs. Thus if there is less self-build it will be because operators have chosen more efficient ways to satisfy demand. This should be seen as welfare-enhancing, rather than in any sense problematic. In time, the introduction of dark fibre might lead to more self-build as competitors follow the 'ladder of investment' – i.e. once using dark fibre easier to step onto the next rung of self-build

4.2.2 Inefficient entry due to arbitrage

4.19 Ofcom suggest that arbitrage could lead to inefficient investment (§5.8). However, as we explain above (section 3.1) in the case of dark fibre arbitrage will not happen.

[31] see §2.63 TalkTalk CFI Response

Therefore, no inefficient investment would result from the introduction of dark fibre. It is anyway worth recognising that even if there was some arbitrage opportunity that it would not necessarily lead to inefficient entry. This is because the prices will be set by efficient entrants and so inefficient entrants will not be competitive.

4.2.3 Investment incentives

4.20 In theory two investment incentives could arise.

4.21 If BT were unable to recover its common costs then its investment incentive would diminish. However, as we explain at §3.34 above there is no threat to BT's overall common cost recovery.

4.22 Another impact on investment incentive could arise through stranded investment. Ofcom considers (§5.7) that introducing dark fibre might result in stranded investment (i.e. reduced returns on past investments) and consequently deter future investment (due to the risk of reduced returns on future investment)[32]. We think that in practice introducing dark fibre is very unlikely to materially discourage future investment since the level of stranding will be very low and the possibility that dark fibre could be introduced was very foreseeable.

4.23 First, the level of stranded assets for BT resulting from introducing dark fibre is likely to be very small (if there is any stranding at all) and so is unlikely to be large enough to be sufficient to undermine confidence in the regulatory regime. Introducing dark fibre will not strand any duct/fibre investment or reduce BT's future incentives to invest in duct/fibre. Provided that the dark fibre price reflects BT's costs (and there is no reason to think it will not) then there is no change in the incentive to invest in duct/fibre. In other words, BT don't need to have a monopoly over provision of the active layer in order to have incentives to invest in duct/fibre. The only BT assets that might be stranded due to dark fibre remedies being introduced are those in the active layer (i.e. electronics). We understand that BT recovers these electronics costs in the rental charge (with the costs depreciated over their useful life which is probably 3-5 years[33]). Given the typical contract duration is 3 years this means that little if any of the active equipment cost could be unrecovered. Further, given that an immediate shift to dark fibre is unlikely at the end of contracts then BT will be able to recover the vast majority of its costs. Lastly, we understand that BT retrieve the equipment and therefore it will have some re-use or resale value.

4.24 Second, the impact on other operators that invest in infrastructure (e.g. COLT, Virgin) is likely to be limited for a number of reasons:

- Dark fibre is likely to be used more in areas where competition is weakest (i.e. not in areas where Virgin and COLT operate). Unlike duct access there is

[32] From an economic perspective the 'undermining' of existing investments (i.e. stranding them) does not harm welfare *per se*. The harm comes via an indirect route since if Ofcom changes regulation which strands sunk investments it might discourage further investments (in civils or elsewhere) due to a lack of confidence that such future investments may also be stranded by a change in regulation.
[33] See BCMR 2012 §20.279

no benefit for a user of dark fibre to focus on high density areas where Virgin and COLT operate

- Operators using passive products will continue to pay a similar price for the underlying duct/fibre infrastructure as under the current regulation – the key difference will be rebalanced active prices
- it is notable that COLT have actively supported the introduction of passive access e.g. its appeal of the 2013 BCMR statement.

4.25 Ofcom used exactly this argument (the impact is small) in the recent LLU charge control to dismiss there being a material negative impact on regulatory certainty as a result of a dramatic change in the MPF versus WLR+SMPF price difference. Ofcom said: "*we do not consider there is evidence that the scale of the potential impact on past investments related to MPF is sufficiently large to undermine the stability and predictability of the regulatory regime*."[34] BT agreed with Ofcom that since the impact was small it would have no impact of regulatory certainty[35]. Ofcom should adopt a similar approach in this case.

4.26 Third, a change in the regulatory approach to introduce dark fibre products has been a foreseeable possibility for many years and so could have been factored into investment plans of BT and other infrastructure investors:

- It has always been within Ofcom's powers to introduce such remedies (provided they were objectively justified). Indeed the recent CID Directive will mean that infrastructure sharing is required.
- Ofcom has never indicated that it would not introduce such remedies.
- Passive inputs have been introduced in other markets e.g. duct/pole access in WLA in UK; duct access/dark fibre in several other European countries (e.g. Spain, Portugal, Italy, Austria, France).

4.27 Therefore, BT and other impacted operators (such as Virgin, Vodafone, COLT) would have been aware for five to ten years that introducing regulated dark fibre access at a future BCMR is a possibility.

4.28 In summary, we do not consider that a change in regulation to introduce dark fibre will – given the specifics of this case – result in regulatory uncertainty that will weaken future investment incentives.

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[34] See §6.75(d) FAMR Vol 2. June 2014

[35] For instance from BT's response to FAMR consultations dated 18 February 2014 (Ofcom at the stage when BT was responding Ofcom was proposing continuing with its previous policy of setting the price difference greater than the cost difference):
§22 "*Ofcom offers no analysis which would suggest that removing the distortion would cause any material harm to these operators, or that they would not remain profitable were the distortion to be removed*."
s4 §4 "*… Our central reason is that the supposition advanced by Ofcom that such a smaller Price Differential may undermine future investment to any material degree is unsupported by any evidence and is simply not credible, as the analysis we provide below demonstrates*."

4.2.4 Distributional effects

4.29 Ofcom mentions the distributional effects of price rebalancing i.e. there will be some 'losers' from introducing dark fibre though it doesn't describe or quantify the potential impact. We do not consider distributional effects to be economically significant for several reasons.

4.30 In and of itself that some consumers lose and some consumers gain is of little economic relevance. It is the aggregate impact that is of most importance. In any case, the distributional effects are minor.

4.31 The high water mark of economic relevance of distributional effects is that if prices *increase* unexpectedly this can cause disruption to customers. However, the level of disruption is very limited since there is unlikely to be any price rise versus the *current* price level[36]:

- The highest price rise resulting from rebalancing is likely to be about 27% on 10M circuits[37]
- This will be offset by the fact that prices are 34% above cost today and that unit costs are falling by about 5% a year (due to scale economies, operating efficiencies and falling equipment costs)

- Customers on 10M circuits will have the opportunity to upgrade to a 100M or 1G circuit for very little premium
- There will be no material geographic effects from dark fibre since it is likely to be used across the UK. In fact, it may be more used in less competitive areas where there is no infrastructure competition (meaning that the areas that will enjoy the most benefit will be those where competition is weakest today)

4.32 It is worth noting that rebalancing has occurred in other markets e.g. calls versus access, business vs residential line rental, high bandwidth wholesale broadband. We are not aware of any material disruption that resulted from such rebalancing.

4.33 Another possible negative distributional effect is the impact on vulnerable customers who are less able to pay – see footnote 36 of the consultation. However, in the case of businesses this impact is small since there is very limited social or political concern to protect certain 'vulnerable' businesses.

4.34 The negative distributional effects are trivial and minor compared to the significant aggregate economic gain.

4.2.5 Other costs/risks

4.35 Below we discuss a number of other costs and risks that are highlighted by Ofcom.

[36] We estimate that the combined impact of the three effects is that 10M prices in FY19 will be slightly lower than 10M prices in FY15

[37] See Figure 1 TalkTalk CFI Response

4.36 Ofcom appears to include the practical implications and the burden of regulation within its assessment of the costs of introducing passive access remedies (§3.3). Whilst this might be relevant the burden for dark fibre is in practice minimal – for instance:

- there will be a small additional cost to Ofcom to monitor and review (triennially) the regulation of dark fibre remedies (probably averaging less than £100k *additional* cost per year[38])
- BT will incur a small cost to develop, operationalize and manage dark fibre products. In the case of dark fibre, the cost will be small since the product is a sub-set of the Ethernet product. There may also be a small cost to BT to operationally comply with the regulation.
- Over the longer term, if regulated access to dark fibre products enabled regulation of active products to be removed, there would be reductions in the overall cost of regulation since regulation of dark fibre is likely to be much less complex and onerous that the regulation of active

4.37 BT says that introducing passive remedies will violate the 'fair bet' principle by expropriating spare capacity (§5.4). We agree with Ofcom (§5.9) that it is not clear that the 'fair bet' principle is in any way violated. Since passive and active prices are based on costs incurred, including a return on capital employed, BT will be remunerated for the investment it has made.

4.38 Widespread service availability would not be threatened by introducing dark fibre since BT would be able to charge a cost reflective price for either dark fibre and/or active products. BT would not be forced to accept a negative margin on any product.

4.39 In respect of the alleged risks/cost it is worth noting that passive remedies have been introduced in several other countries. We are not aware of any of these countries experiencing difficulties such as: inability to recover common costs; inefficient pricing structures; lack of investment in infrastructure; excessive regulatory burden; or, lack of widespread availability. The 'Armageddon' that BT suggests will result from introducing dark fibre is simply unrealistic.

4.40 MBNL have recently signed a deal with CityFibre to provide mobile backhaul[39]. Notably this is provided as dark fibre. This demonstrates the interest and demand for dark fibre.

[38] Ofcom would have to review the introduction of passive remedies in subsequent market reviews whether or not it introduced passive remedies in this review. Therefore, there is no gain in administrative burden from not introducing passive remedies

[39] http://www.cityfibre.com/news/2014/11/12/cityfibre-signs-dark-fibre-deals-with-ee-and-three-to-enhance-mobile-networks

5 Nature of the dark fibre remedy

5.1 Ofcom poses a number of questions regarding in which markets passive remedies should be imposed and the nature of the obligation that should be placed on BT e.g. application of EOI, price control. We discuss these below focussing on dark fibre.

5.1 Where should be imposed

5.2 Ofcom asks (question 7) what the impact would be if dark fibre was restricted to certain product types or geographic markets. We consider that an obligation to provide dark fibre should be imposed in all markets (both geographic and product) where BT has SMP since it will effectively address BT's dominance and improve competition, innovation and efficiency. The compelling benefit from dark fibre exists even if SMP is relatively weak and so we see no reason to restrict the introduction of dark fibre to areas where SMP is stronger[40].

5.2 Conditions

5.3 We agree with Ofcom's proposal (§6.32) to require BT to provide dark fibre on EOI terms for new supply only. EOI is the surest method to reduce the likelihood of BT discriminating by degrading the service it provides to competitors (e.g. through slower supply, higher faults, or inferior reporting). Requiring only new supply to be provided on an EOI basis will mean the costs that are incurred as a result of the requirement are limited.

5.4 Although EOI is a very valuable obligation it must not be seen as a panacea to all discrimination concerns:

- Ofcom needs to recognise that EOI provides no protection against price discrimination (such as margin squeeze) since the wholesale charge for dark fibre is not 'paid' in any meaningful sense by BT's downstream operations that consume dark fibre. Rather the wholesale charge is simply a notional internal transfer charge, which does not have any impact on BT's incentives.
- EOI does not protect against all forms of non-price discrimination – for example, it offers little or no protection against BT: favouring product developments that benefit BT's own downstream interests; giving its downstream arm advanced knowledge of product/price changes; setting pricing structures that favour its own downstream operations; or designing investments that are better suited to its own downstream operation's commercial plans than to those of rivals. In the case of dark fibre, there is a particularly high risk of these forms of discrimination since there is no strong

[40] once dark fibre is introduced in one area the incremental administrative, regulatory and operational burden of allowing it in other areas is small. We do not consider that Ofcom should be too concerned about the use of dark fibre in markets where BT appear to have no SMP. Any restrictions are not likely to result in any welfare gain. Any distortions that might arise are likely to be limited since the dark fibre will be priced at cost and the margins BT will achieve will be competitive.

separation or 'Chinese Walls' proposed between the part of Openreach that sells dark fibre and the part of Openreach that sells active products. Therefore, Ofcom needs to impose obligations that effectively prohibit and discourage these types of behaviour.

- If EOI is imposed Ofcom needs to be wary to avoid a situation where BT itself uses different dark fibre variants to those used by other CPs. This situation has arisen in providing voice and broadband services where BT uses WLR and SMPF to provide voice and broadband whereas its only two significant on-net competitors use MPF. Though WLR, SMPF and MPF are provided on EOI terms the intent and effectiveness of EOI is undermined by the use of different products and the ability of BT to engage in to non-price discrimination is increased.

5.5 We agree with Ofcom that the dark fibre product can effectively be a subset of the Ethernet product that relates to the dark fibre component (with a few minor amendments[41]).

5.6 BT say that dark fibre will "*entail a significant degree of technical complexity … [f]or example an additional dedicated fibre may need to be blown down new sub-duct in existing duct …*"[42]. The level of complexity is exactly the same as for an active product – dark fibre entails no *additional* complexity than that which is already required (see §6.22). The arrangements for extending infrastructure should also mirror those for Ethernet (e.g. ECC – excess construction charges) as Ofcom highlight at §6.21ff.

5.7 As part of the SMP conditions, Ofcom should include a deadline by which the dark fibre product should be offered. This should reflect *inter alia* that an SOR for dark fibre was submitted (by Vodafone) to Openreach in November 2014, and that Openreach has therefore been aware of the industry's requirements since at least that date. If, based on reasonable development timescales, the launch of the dark fibre product is possible before BT is ready to consume the EOI product then it might be appropriate to de-link the launch of the product and its use by BT.

5.3 Pricing

5.8 The economic benefits of a dark fibre product will only be fully realised if its pricing is efficient and, in particular if:

- prices are not excessive; and,
- prices do not distort the efficient choice between using dark fibre and active Ethernet products. In particular, the difference in prices between dark fibre and active Ethernet products needs to reflect BT's costs of the active layer. If

[41] For example, will need to design how line testing will be carried out. Also for 'extended reach' products there may need to be variants that includes repeaters and/or amplifiers (which may be bandwidth dependent)

[42] BT response 27 May 2014 to BCMR Call for Inputs §89

the difference is too large then it will allow arbitrage and encourage inefficient entry. If the difference is too small it will foreclose efficient entry.

5.9 BT has a strong incentive to set a high dark fibre price – both to increase returns on dark fibre and to weaken competition against its active products. It is critical that such anti-consumer behaviour is checked through robust price regulation.

5.10 Ofcom has outlined a number of options for how prices could be set/controlled. We describe our view of the most appropriate form of price regulation below[43].

5.11 The first option presented by Ofcom is that there should be no specific pricing obligation. We agree with Ofcom (§7.11) that BT has both the ability and the strong incentive to price dark fibre at an excessive level and/or in a way that deters efficient entry; accordingly, this option should be rejected.

5.12 The second option is a FRAND pricing obligation. Under a FRAND type obligation BT's prices are required to be 'fair, reasonable and non-discriminatory' but no specific price level is set e.g. a 'charge control' that sets a maximum £ price on a particular product or a maximum change in average prices (e.g. RPI – 11.5% on Ethernet basket). Because a FRAND obligation is inherently unspecific and ambiguous it is open to different interpretations.

5.13 We do not think that a FRAND obligation will be effective in ensuring prices are set at an appropriate level in a timely fashion. BT has strong incentives (and the ability) to set an excessive price for dark fibre which would allow insufficient price difference between dark fibre and active products. Therefore, BT is likely to use the ambiguity inherent in a FRAND obligation to set excessively high dark fibre prices and/or an inadequate margin. Therefore, a dispute and/or litigation is highly likely in order to get prices set 'independently' – indeed Ofcom itself recognises that this is likely[44]. As a result it will take some time before prices are set at an appropriate level. Whilst guidance may help reduce ambiguity and the ability of BT to exploit the ambiguity there is still remaining uncertainty that BT will exploit.

5.14 It is notable that in other areas Ofcom has moved away from unspecific type obligations (such as basis of charges obligations or FRAND) in favour of charge control that specify maximum prices or price levels (e.g. SFI and TRC charges).

5.15 The third option is a charge control. We consider that this is by far the most preferable option for setting prices. A charge control is the default mechanism for setting prices across a range of markets where BT has SMP. We see no sound reason for not imposing a charge control in this case. Ofcom's reasons for not imposing a charge control in other cases do not apply in the case of dark fibre.

[43] We work from the assumption that in areas where dark fibre is introduced BT's active products are charge controlled at FAC, as part of a basket (which is the case for most SMP products today).

[44] In the COLT appeal judgement "*In its skeleton argument, however, [Ofcom] stated that applying FRAND terms would inevitably lead to disputes which would in turn be referred to OFCOM and ultimately to the Tribunal. This was because there was likely to be clear disagreement as to what price was fair and reasonable, given that Colt saw reducing BT's ability to recover its common costs as a public benefit.*" COLT vs Ofcom 1212/3/3/13 §159

Cited reasons for not imposing a charge control

Reason to not impose charge control	Description	Relevance for dark fibre
Materiality	that the product which would be controlled is of low value (i.e. the materiality threshold is not met)	dark fibre is a very material product: if 30% of leased lines were provided by dark fibre revenues would be about £100m[45];
Impact on innovation	there is potential innovation which a charge control might constrain or prevent	there is little innovation in dark fibre (there is much less innovation than there is in Ethernet which is charge controlled)
Ability to forecast costs	forecasting costs is difficult because, for example, total costs and/or future demand cannot be reliably forecast, which raises the risk that prices are set inaccurately (e.g. too low expropriating existing (or discouraging future) investment (e.g. VULA[46])	unit costs are well understood (they need to be in order to be able to set the Ethernet charge control) and Ofcom has all of the relevant costs from the analysis it undertakes when setting active prices

5.16 Therefore, we think that there is a very clear and strong case for imposing a charge control on dark fibre.

5.17 Ofcom discusses in its consultation paper (at §7.16ff) two broad options for setting a charge control: the orthodox and widely used cost-based approach; or an active-minus[47] approach.

5.18 Setting a cost-based price for dark fibre would be straightforward. The required steps to derive the costs and so charge would be:

- use the total FAC costs[48] for all AI and TI fibre based circuits;
- exclude the costs of the active layer (i.e. electronics) to derive total duct/fibre costs;

[45] AISBO revenue ~£800m pa. Dark fibre cost of this about 40%. Assume 30% of active circuits provided using dark fibre. Total dark fibre revenue will be £800m x 40% x 30% = £96m

[46] §12.138 Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. Volume 1: Statement on the markets, market power determinations and remedies. June 2014

[47] it is incorrect to call this mechanism 'value-minus' since there is no evidence that the active prices reflect 'value'. Rather the prices reflect BT's profit maximizing prices

[48] The FAC costs include incremental costs and an allocation of costs that are common between AI/TI and other products

- divide duct/fibre costs by number of fibre circuits to derive a cost per circuit (that is same irrespective of downstream use[49]).

5.19 Ofcom already has all of this cost data or would in any case be gathering or forecasting it for the purpose of setting charge controls for AI and TI products. In the case of dark fibre there is no need to grapple with the complexities of distance or portion of the network – rather the price could be based on a per circuit basis (as for active products). The recovery of costs between connection and rental could similarly mirror what is done for active products. We do not understand why Ofcom think setting dark fibre prices would be a 'complex exercise' (§7.18) – we consider it would be no more complex than the regulation of prices for active products or other SMP product.

5.20 Despite the orthodox approach of setting a cost-based charge control being highly tractable and appropriate in the circumstances Ofcom has also considered an active-minus. It seems that the reason for this is that Ofcom appears to think that it would be in consumers' interests to continue to allow BT to price discriminate in the downstream market and so protect BT's existing pricing structure and pattern of common cost recovery (§7.21, §7.35) – under a cost-based approach BT would have to rebalance its active prices. We consider that an active-minus approach is highly unappealing.

5.21 First, we do not think there is any evidence that maintaining BT's current common cost recovery pattern is in consumers' interests. As we explain above (section 3.2), rebalanced prices will almost certainly be more efficient that the current price structure (and certainly not be less efficient). No evidence has been presented that the current prices are efficient or should be protected by regulation.

5.22 Second, and in contrast to the cost-based approach to setting dark fibre prices, the active-minus approach is highly problematic:

- it will chill innovation since rivals' downstream products will need to match one of BT's active products. Thus if a rival wanted to introduce a different service to that which BT offered (e.g. burstable, usage based charging, different bandwidth) then it would not be clear what price it should pay for dark fibre;
- such an approach would be novel, untried/untested, complex and impractical. It appears Ofcom and BT agree with these concerns. In the COLT appeal, Ofcom[50] described a similar active-minus approach as 'impractical' and BT[51] said it would require a 'root and branch change to regulation'. Such an approach has not, as far as we are aware, been used elsewhere;

[49] If the price for dark fibre were cost based, it would, by definition be the same irrespective of downstream use since the cost would be the same for different downstream uses

[50] "*OFCOM said Colt was now advancing a new case with novel suggestions for access pricing. […] . But OFCOM again thought these suggestions were impractical.*" COLT vs Ofcom 1212/3/3/13 §161

[51] "*BT did not think Dr Lilico's suggestions for minimising the disruption to BT's bandwidth gradient were very helpful. In particular, his suggestions … were unprecedented and would involve a root and branch change to regulation*" COLT vs Ofcom 1212/3/3/13 §161

- it would be open to gaming by BT which will distort the market and may make the remedy ineffective. This is a particularly high risk given the inherent complexity and novelty in setting active-minus prices;
- it would result in pricing uncertainty (compared to a cost based charge control) since the price would vary as BT chose to vary active prices. Such pricing uncertainty would tend to suppress demand for the product;
- it may require disclosure of detailed and sensitive BT cost information (which if it were not disclosed would result in transparency issues for other stakeholders);
- it will require policing to make sure that (say) a dark fibre that was sold as being used for 100Mbps service was not being used for 10Gbps. Such policing may need to be conducted by Ofcom, as arrangements between CPs and their customers may be commercially sensitive;
- There are additional difficulties with the specific sub-options presented by Ofcom (see §7.25ff):
  - 'Each product individually': this would require the determination of the active layer costs for each of 10s of products. Would these active layer costs be determined and fixed in advance or based on BT's actual costs? How frequently would the cost estimate be updated? It is not clear what would happen in the case a new product were launched.
  - 'Basket of active products': this essentially determines a single flat dark fibre price. Assuming that the 'minus' is equal to the cost of the active layer then the dark fibre price determined using this method would be the same as using a bottom-up cost basis. We see no reason to adopt this method over a straightforward cost based approach
  - 'Single reference product': this effectively sets a dark fibre price higher than the average cost in order to allow BT to continue existing price discrimination and avoid rebalancing its prices. This will distort the market and restrict competition for no good reason (avoiding rebalancing is not a good reason for such a restriction of competition, in the absence of strong and compelling evidence that the current pricing structure generates consumer welfare benefits over all possible alternatives). If Ofcom chose this option it would arbitrarily limit competition in order to protect BT's chosen pattern of common cost recovery when there is no evidence that such a pattern is in consumers' interests

5.23 We have three other comments regarding the charge control:

- The same cost standards and methods should be used for setting the dark fibre charge control and active charge control e.g. FAC or LRIC+EPMU, CCA or HCA, volume forecasts. If different methods/models are used then there is a risk of inconsistency which will lead to market distortions
- The dark fibre products should not be included in a basket with other products (e.g. active products), otherwise BT will use the flexibility to reduce (and distort) the price differential between dark fibre and active products.

Dark fibre products might be included in a dark fibre basket that included different dark fibre variants (e.g. the dark fibre components of EAD, EAD-LA and EBD), but not any non-dark fibre products.

- The (fixed) cost of dark fibre product development / implementation should be recovered equally across all dark fibre and active products. This was the same approach that was used for TAM costs (which were used only for MPF) whereby the TAM costs were recovered across SMPF and MPF. This allowed LLU/MPF to develop (and not be undermined by high initial prices above incremental cost) which ultimately benefitted all customers and allowed BT to recover its costs[52]. Such an approach is consistent with the concept of recovering costs from those that benefit from the cost being incurred.

5.24 In summary, a cost based charge control is the most effective and appropriate mechanism to ensure efficient dark fibre prices. Such a cost-based charge control is Ofcom's default approach to setting charges and there is nothing about dark fibre that would indicate the need to deviate from this approach. A FRAND-type obligation will be exploited by BT to set excessive charges, whereas an active-minus approach is fraught with complexity and uncertainty and will chill innovation – such complexity is ultimately unnecessary and serves no useful purpose. The claimed benefit of active-minus – that it can avoid BT rebalancing active prices – is a false benefit, since rebalancing will result in more (not less) efficient active prices. There is no risk of inconsistent dark fibre and active prices provided that they are both determined using the same cost model.

6 Other issues

6.1 Ofcom considers (at §3.7) the implications of the EC Civil Infrastructure Directive ("CID") on passive remedies. The CID is aimed at encouraging infrastructure sharing by telecoms operators. However, there is no requirement in the CID that would lead to an obligation on BT (or other CPs) to provide *dark fibre*. Therefore the CID is a 'red herring' in respect of dark fibre.

6.2 Ofcom compares (at §4.33ff) the potential uptake of passive remedies and consequential de-regulation of active products to what occurred with the introduction of LLU (which led to de-regulation of the downstream WBA market in 95% of the UK). We agree that uptake of dark fibre (if introduced) will not allow an immediate de-regulation of active products (in this upcoming market review period). However, Ofcom suggest that the uptake of dark fibre, and therefore de-regulation of active products, may take 'considerably longer' that for LLU given that broadband was nascent when LLU was introduced. We do not think this shows that uptake of dark fibre will be much slower than LLU. There are various reasons as to why uptake

[52] §4.26 Local loop unbundling: setting the fully unbundled rental charge ceiling. Statement. 30 November 2005

of dark fibre and consequential de-regulation of active products may in fact be faster than in the case of LLU:

- For CPs to be able to consume LLU (rather than WBA) required them to unbundle exchanges and physically install their own equipment in these exchanges and provision backhaul circuits between the exchanges and their own core networks. This took around 7 years. Conversely, for CPs to use dark fibre either needs no new infrastructure in exchanges (since they purchase an end-to-end EAD) or relies on infrastructure in exchanges that already exists[53] (if they purchase EAD-LA). This means that dark fibre could be adopted much more quickly than LLU.
- The potential rate of switching from active circuits to dark fibre will be high. CPs are likely to consider a switch when a new circuit is required by a customer and/or when the contract on an active circuit comes to an end (which is typically 3 years).

6.3 These factors mean that the shift to dark fibre could be faster than the shift to LLU.

6.4 The assessment of dark fibre and duct access / pole access should be separate since Ofcom could impose either remedy, both or neither. In this respect, Ofcom's consultation will be most transparent and helpful if Ofcom provides clear and separate assessments of the costs and benefits of each possibility – else, for instance, disadvantages that were only relevant to duct access may be assumed to apply to dark fibre.

6.1 BT's response

6.5 In its response to Ofcom's Call for Inputs, BT provided a tedious, un-evidenced and incoherent polemic against the introduction of passive products. BT's arguments are out-dated and those of a monopolist fighting against the introduction of competition and in large part is unfounded scaremongering. We consider that 'BT doth protest too much' – the vehemency of their response reflects their fear of added competition.

6.6 We have addressed many of BT's arguments above (e.g. passives will result in arbitrage, need to allow BT to maintain its current pattern of common cost recovery). Below we comment on two arguments that we have not included above.

6.7 First, BT suggest that regulation should only change (and passive remedies be introduced) if there is a lack of effective competition. e.g. at §15

> *We are concerned that Ofcom appears to take as a starting point for its analysis an assumption that passive remedies would be beneficial, leaping to questions about common cost recovery and the types of passive remedies that could be imposed, and the issues that could be encountered in implementing them. This is the wrong starting point: Ofcom should instead start by assessing whether there are issues of lack of effective competition*

[53] e.g. to provide an end to end Ethernet circuit, TalkTalk purchase EAD-LA for the tails and provide their own core transmission through their own network

or of lack of effective regulation, and only if there are, then consider the proportionate remedies, including whether the relevant issues would be best resolved by changing the existing active remedies before considering introducing new passive remedies.

6.8 Second, BT misunderstand the regulatory framework and are asking the wrong question. The correct question is whether introducing dark fibre will be in consumers' interests – i.e. will it likely improve competition and efficiency. There is no need to particularise or prove a particular weakness (e.g. lack of effective competition) in the current regime.

6.9 There is no obligation (or even preference) to intervene at a single point (§73). In fact to do so would result in regulatory stasis. Rather any and each additional intervention should be assessed on its own incremental merits.

7 Ofcom questions

In this section we briefly summarise our answers each of the questions Ofcom posed cross-referring to the main section of our response. Our answers refer principally to dark fibre except where stated.

Question 1: Do you agree with our preliminary framework for considering the case for passive remedies?

7.1 We broadly agree with Ofcom's overall framework. However, Ofcom's assessment should focus on the primary issues of economic efficiency and competition impacts. Distributional impacts, commercial/regulatory consequences and availability are second order issues. The EC Civil Infrastructure Directive is of no relevance to the assessment of dark fibre. Our answer to this question is discussed more fully in section 2.

Question 2: Do you agree with our preliminary views on the potential benefits of passive remedies? Please provide evidence to support your view.

7.2 We agree with much of Ofcom's assessment of the benefits of dark fibre. Dark fibre will bring added competition at the active layer. It is axiomatic that competitive markets are more efficient than monopoly markets since the relentless and existential threat of entry and exit that is embodied in the competitive process forces all suppliers to innovate and improve their products to ensure that they are competitive. In particular competition will deliver a wealth of innovation benefits (new technologies, processes and products), lower costs, quality improvements and facilitate the move to higher speed services. In time it will allow less complex regulation.

7.3 Our answer to this question is discussed more fully in sections 4.1 and 3.2.

Question 3: Do you agree with our preliminary views on the impacts and risks of passive remedies? Please provide evidence to support your view.

7.4 Though risks/dis-benefits resulting from introducing dark fibre may exist at an abstract level, on inspection in this case they are either non-existent or are immaterial. In particular:

- Though there may be less self-build this will improve efficiency
- Inefficient entry (facilitated by arbitrage) is unlikely to occur since BT will rebalance prices to remove the arbitrage opportunity that exists today
- The change in the pattern of common cost recovery is likely to *improve* efficiency
- There is, in practice, unlikely to be any reduction in perceived regulatory uncertainty or reduced investment incentive

7.5 We think that Ofcom must avoid the pitfall of assuming that any change is a potential harmful risk. In practice, once thought through logically, the mooted risks are very limited.

7.6 Our answer to this question is discussed more fully in section 3.

Question 4: What are your views about the potential impact of passive remedies on the pattern of common cost recovery and the associated distributional impacts?

7.7 If dark fibre were introduced it would be on the basis that the price would be the same irrespective of downstream use. This would result in BT rebalancing its active pricing so it recovered similar levels of common costs across all bandwidths. There is no evidence whatsoever presented that this would reduce efficiency. In fact, it is likely to improve efficiency. Further, there is no threat to BT's ability to recover its common costs.

7.8 Rebalancing would also slightly increase the price of some lower bandwidth services but the negative impact would be small: unlike residential services there are no 'vulnerable' customers that need protecting; and, in any case, these customers would be able to substantially upgrade their speed at very little additional cost.

7.9 Our answer to this question is discussed more fully in sections 3 and 4.2.4.

Question 5: Do you agree with our initial view that mobile backhaul and fixed broadband backhaul are likely to be the primary applications with significant demand for passive remedies?

7.10 We think that the initial focus for use of dark fibre with be higher capacity circuits (1G and 10G) – both backhaul circuits (i.e. mobile backhaul and LLU backhaul) as well as access circuits. There are a number of reasons for this:

- The ability to 'self-innovate' will be greatest for high bandwidth services – new innovations tend to be initially available at higher speeds
- Initial use of dark fibre is likely to focus on new/upgraded circuits rather than migrating existing circuits. Since there are proportionally more new

connections at higher bandwidths there will be proportionally more use of dark fibre at high bandwidths

- It will be simpler to provide backhaul circuits (which are on average higher bandwidth) since they are for 'internal' use and there is not the complexity involved with customer facing installations (e.g. engineering force training, appointing)
- Given the higher cost of electronics cost for higher bandwidth products, using dark fibre for these products offers the greatest cost reduction opportunity
- There is most margin opportunity (based on Openreach's *current* Ethernet prices) though this difference in margin will decline

7.11 However, in time we would expect dark fibre to be used more widely. The innovation, flexibility and electronics cost reduction opportunities are sufficient such that even if Openreach rebalanced its Ethernet prices (see §2.15 below) then using dark fibre would be still be attractive over the full range of active products and across all geographies.

Question 6: What benefits might duct access offer over dark fibre and vice versa? Is there a case for having both remedies?

7.12 We have no comment on the benefits of duct access.

Question 7: If passive remedies were restricted to particular product types or geographic areas how might this affect the usefulness and benefits of the passive remedy?

7.13 Introducing passive products will bring benefits in all markets where BT has SMP. Therefore, we do not understand why Ofcom would artificially or arbitrarily restrict the introduction of passive remedies and so restrict the benefits that it will deliver. Once the dark fibre product is designed and implemented there is no additional cost incurred to introduce it in all markets.

7.14 Our answer to this question is discussed more fully in §5.2.

Question 8: What arrangements would be appropriate for the supply of new infrastructure for passive remedies?

7.15 As Ofcom has noted there is no issue with the supply of new infrastructure for dark fibre since it simply mirrors what is done for active circuits e.g. ECC charges.

Question 9: Do you agree with our initial views about the non-discrimination arrangements for passive remedies?

7.16 Yes, we agree with applying EOI for new dark fibre circuits i.e. that BT will use the wholesale dark fibre product for new supply. This will limit BT's ability to discriminate whilst not imposing disproportionate costs.

7.17 Our answer to this question is discussed more fully in section 5.2.

Question 10: In light of the trade-offs identified, which broad options on pricing do you consider would be most appropriate for passive remedies and why? Please also provide details if there is another pricing approach you consider would be appropriate in light of the considerations identified in this section.

Question 11: If a value-based (active minus) approach to pricing dark fibre were adopted, what do you think would be an appropriate active wholesale product (or products) to reference?

7.18 Introducing a cost-based charge control will be the most effective form of price regulation

- A FRAND obligation will be gamed by BT meaning efficient prices will not be set for several years
- An active-minus pricing structure is: highly complex, untested and risky; is open to gaming; will limit innovation; and, will create significant uncertainty reducing investment. Its only claimed benefit – allowing BT to maintain its existing common cost recovery pattern – is actually a dis-benefit since the current common cost recovery pattern is almost certainly inefficient
- By contrast a cost based charge control is well tested approach that is very tractable in this case and will prevent excessive dark fibre prices and distortion of the price gap between dark fibre and passive products

7.19 Our answer to this question is discussed more fully in section 5.3.

Question 12: Do you have any other comments on the issues raised in the document or comments that might aid our consideration of the passive remedies as a whole?

7.20 In our main submission (section 2-6) we make a number of other relevant comments.