openreach

Openreach's response to Ofcom's consultation

"Dark Fibre Consultation: Consultation on adding dark fibre to the remedies for business connectivity markets"

NON-CONFIDENTIAL VERSION FOR PUBLICATION

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Foreword

On 23 November 2017, Ofcom published a consultation ("the DFA Consultation") on proposals to add a Dark Fibre Access ("DFA") remedy to the package of remedies ("the BCMR Temporary Conditions") which it had already imposed on BT for the period up to 31 March 2019 in markets for the provision of wholesale leased lines at bandwidths at and below 1G ("Lower Bandwidth CISBO") in specific geographic markets.

The DFA Consultation also seeks views on the definitions of these markets and findings of Significant Market Power ("SMP") in them, which were made using Ofcom's emergency powers under the Communications Act 2003 ("CA 2003"): these were set out in a Statement also published on 23 November 2017 entitled "Business Connectivity Markets – Temporary SMP conditions in relation to business connectivity services" ("the 2017 BCMR Statement").

As well as setting out Openreach's views on the proposed dark fibre remedy and Ofcom's market definitions and SMP findings, this response also sets out our views on remedies imposed via the 2017 BCMR Statement, although we note Ofcom is not formally consulting on these remedies.

We have sought in this consultation response to provide as much detail and evidence as possible in order to assist Ofcom but, given the very short timescales for responding to a consultation of this nature, we simply have not been able to gather all that we would have done given adequate time to respond. We will continue to gather and prepare additional evidence following submission of this response and will provide it to Ofcom as soon as is practicable.

This response to the DFA Consultation is provided by Openreach. BT fully supports and endorses this response: BT shares all the views expressed by Openreach on the issues under consultation.

Openreach has consulted with BT on the preparation of this consultation response, as parent company of Openreach, and given that (i) the SMP remedies under consultation would directly apply to BT plc and (ii) BT plc was the appellant of the CAT appeal of the previous BCMR decision (and would be the appellant of any appeal of a decision following this DFA Consultation).[1] In addition, BT has contributed to the substance of this response as supplier of services to Openreach.

[1] In light of these factors, some references in this response are to BT rather than Openreach.

1 Executive Summary

1. At Openreach, we recognise that businesses throughout the UK rely on leased lines as essential components of their communications systems, and to support the provision of mobile telephone and fixed residential broadband services. Openreach fully supports, and indeed shares, Ofcom's main objectives to ensure efficient outcomes for consumers, to promote effective competition and to foster innovation in the interests of consumers.

2. However as we show below, we believe Ofcom is misguided in seeking to impose a new dark fibre remedy on the basis of market definitions and SMP assessments which were carried out for the purpose of imposing temporary and urgent SMP remedies in light of the Competition Appeal Tribunal's ("CAT") judgment in BT's appeal against Ofcom's 2016 Business Connectivity Market Review ("BCMR").

3. Dark fibre is a highly contentious and entirely new remedy, the imposition of which (following a change in Ofcom's position) was challenged by a number of parties in the CAT.

4. The grounds of appeal directed at the dark fibre remedy were not determined because Ofcom's market analysis was found by the CAT to be unsound with the result that the dark fibre remedy was to be quashed in any event. It was expected that, following the Tribunal's judgment, Ofcom would correct its erroneous market analysis, and then consider the appropriate package of remedies to address any competition concerns identified in that analysis. It has failed to do so, but is nonetheless seeking to impose a controversial dark fibre remedy.

5. Ofcom proposes to modify the BCMR Temporary Conditions to add a dark fibre remedy to the package of remedies already imposed; a proposal announced two weeks after the publication of the CAT's full judgment. This is not an appropriate approach: this is a completely new remedy (and one which has been explicitly challenged) not a simple "modification" of existing remedies. Its imposition, absent a proper market analysis, would be unlawful.

6. Further, this measure cannot be imposed following such a severely constrained approach to consultation and engagement. A five week consultation (ending on 29 December) for a measure which has a significant impact on Openreach and other parties, and is effectively irreversible due to the changes it would invoke in CPs' business models and investment plans, is patently unfair and inconsistent with established Ofcom and EC guidelines and policies.

7. There is no urgent need to impose dark fibre that justifies the rushed and unfair process that Ofcom is adopting. Other "tried and tested" network access remedies that have proved highly effective in constraining market power and promoting competition are in place until April 2019.

8. It appears to us that Ofcom is attempting to resurrect a remedy it imposed following the flawed and unlawful 2016 BCMR, rather than considering matters afresh, with an open mind, following a thorough market analysis. Ofcom ought to have reconsidered the place of this remedy within a package of remedies and its appropriate scope of application (if any), having conducted a lawful market analysis which complies with the terms of the CAT's judgment and takes utmost account of the Commission's Notice on Market Definition and SMP Guidelines.

9. A full reconsideration by Ofcom is required in order to: properly identify those markets in which Ofcom considers there to be competition issues to address; and properly assess whether dark fibre is required above and beyond the other network access remedies which Ofcom requires BT to provide.

10. Ofcom's market analysis, by its own admission, is partial and incomplete pending full consideration of the remitted matters. Ofcom continues to rely on its findings in 2016 BCMR (which itself was based on data gathered in 2014 and 2015) subject to a number of quick fixes to deal with the Tribunal's criticisms (for example, by defining the Lower Bandwidth CISBO market).

11. There was less than two weeks between the handing down of the CAT's judgment and the publication of the 2017 BCMR Statement and this DFA Consultation. Ofcom's market analysis (and the application of these quick fixes) must have been undertaken, therefore, without the

benefit of the CAT's thorough analysis of Ofcom's earlier errors (i.e. it was prepared on the basis of supposition).

12. These quick fixes do not, as claimed by Ofcom, identify markets in which Ofcom can be "sure" that BT has SMP. A number of key product and geographic market issues have not been sufficiently investigated, the CAT's recommendations have not been fully and properly reflected, and the information on which Ofcom relies is largely out of date. A full analysis of these issues might prove Ofcom's temporary finding on market analysis to be insufficiently conservative.

13. Ofcom does not identify any additional competition concerns in the DFA Consultation to those identified in the 2017 BCMR Statement. It has not, therefore, made the case for a DFA remedy in addition to the Temporary Conditions as a means of ensuring effective competition over the 16 month review period. It is for Ofcom to demonstrate that such an additional remedy is appropriate and necessary, and not for Openreach (and/or BT) to provide evidence as to why Ofcom is wrong. This attempt to flip the burden of proof onto Openreach (and/or BT) is symptomatic of a consultation process which is wholly inadequate.

14. The case for a dark fibre remedy above and beyond active remedies is even less clear than it was in 2016. Ofcom has not demonstrated that the benefits outweigh the costs in the short period up to March 2019, nor when taking a longer term view.

15. Critically, Ofcom has wrongly assumed (without having first obtained any evidence on the issue from Openreach) that BT can effectively enforce a limitation of the dark fibre remedy to the Lower Bandwidth CISBO market through contractual restriction, thereby removing the risks from the impact of dark fibre on prices and volumes in the market for services above 1G, i.e. Very High Bandwidth ("VHB") services.

16. In fact, such a restriction would take significant time to negotiate, would be susceptible to dispute and would be difficult to enforce effectively without significant investment in essential monitoring systems. Those monitoring systems would add significantly to up-front and ongoing implementation costs. In fact, the most cost effective monitoring solution is likely to be an EAD box thereby negating the very cost savings which Ofcom has claimed would be made from the removal of this equipment under a dark fibre remedy. Further the contractual restrictions imposed under Openreach's PIA product are not a relevant comparator.[2]

17. Given the uncertainty surrounding effective enforcement, dark fibre usage will inevitably spread into the VHB market in which Ofcom finds BT not to have SMP in the 2017 BCMR Statement. As well as leading to the use of this remedy in an unregulated market, this would trigger to some extent the risks discussed in our earlier BCMR submissions, particularly the risks to competing infrastructure investors.

18. Ofcom's take-up and cost savings estimates are highly uncertain and do not bear scrutiny. The claims made about innovation are speculative and, to the extent the claimed potential for innovation exists, it can be realised in the absence of dark fibre by Openreach acting assertively to keep pace with customer demand for innovation. Before its change of thinking on dark fibre in the 2016 BCMR, Ofcom itself believed that the specific benefits claimed by proponents of passive remedies such as dark fibre could, to a large extent, be achieved through the imposition of active remedies.[3] Further, even in the 2016 BCMR, Ofcom forecast limited take-up of dark fibre at bandwidths below 1G, suggesting limited benefits in this market segment.

19. Openreach has demonstrated its commitment to meeting demand for innovation by developing and consulting with its customers (from 18 October to 18 November 2017) on a new Optical Spectrum Access Filter Connect ("OSA FC") service which is intended to give customers greater control over their services (albeit aimed at the VHB market). Ofcom dismisses this product in a single paragraph and before having met with Openreach to discuss this product in detail.

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[2] See further section 5.B.II of this DFA Consultation response.

[3] BCMR Final Statement, March 2013, paras 1.40 to 1.45

20. The costs and risks of the proposed remedy are understated by Ofcom. There would be additional costs for Openreach in dealing with faults resulting from the removal of equipment. The risks to the incentives of rivals to invest have also been wrongly dismissed (even in the Lower Bandwidth CISBO market).

21. Nor is Openreach ready and able to supply dark fibre as asserted by Ofcom. The product specified for the purposes of Ofcom's proposed intervention is different to the product that BT was required to introduce in October 2017 and Openreach would need to undertake operational trials before proceeding. There is no realistic prospect of such a product being ready to be introduced in full on 1 April 2018, as assumed by Ofcom.

22. These problems are of Ofcom's own making and are wholly avoidable: Ofcom is considering the matters remitted back to it and this will include a consideration of what overall package of remedies is appropriate for the business connectivity market in the next BCMR (commencing April 2019).[4] Ofcom has an opportunity, therefore, to fully consider all of these issues and to update its analysis.

23. In light of the significant concerns outlined above, we urge Ofcom to reconsider its proposal to introduce a new DFA remedy at this stage. It simply does not have the evidence base to justify either its current market definitions or the imposition of a novel and untested remedy. Further, the process followed by Ofcom in issuing its consultation proposals is flawed and unfair such that it ought to re-evaluate whether, in light of these serious errors, its proposals are appropriate at this stage.

Leased Lines Charge Control

24. With regard to the Leased Lines Charge Control ("LLCC") which Ofcom has imposed in the 2017 BCMR Statement, we believe Ofcom should consider separately modelling the new basket costs rather than make approximate adjustments to the old basket model to take account of its new DFA proposals (substitution effects and implementation costs) and its new market definition (re-defined core and additional Central Business District ("CBD") boundaries). If Ofcom does not build a new model, it should adjust its proposals as follows:

    a. Change the X from 15.75% to 14% if DFA is not implemented. Specifically, Ofcom should use 2016/17 and 2017/18 price trends assumptions to calculate the one-year Xs for 2018/19; and increase 2018/19 costs to reflect increases to Cumulo and pensions servicing costs; and

    b. Change the X from 13.50% to 11% if DFA is implemented. Specifically, Ofcom should correct errors in its CBD main link volume adjustment, increase DFA volumes to reflect higher aggregation substitution and 100M substitution; and increase 2018/19 costs to reflect increases to Cumulo and pensions servicing costs.

Minimum Service Levels

25. Since Ofcom imposed Ethernet Minimum Service Levels ("MSLs"), in the 2016 BCMR, Openreach has significantly improved key elements of Ethernet service, for example by cutting the time taken to provide circuits and improving the management of complex circuits which are the most complex to deliver.

26. Despite this ongoing transformation, Openreach has for some time had new information drawn from the significant operational insight which we have gained since the MSLs were first imposed, and supplemented by independent analysis carried out ✂ , which indicates that certain MSLs are not achievable. We have sought to engage in dialogue with Ofcom to present this evidence and to reach a solution that continues to deliver good outcomes for customers.

27. In these circumstances, Openreach believes that Ofcom should re-consult and amend the targets

[4] Para 1.16

for the relevant MSLs: our specific suggestions are set out in this responses. We believe the suggestions are reasonable and that they would not in any way weaken the continued incentives on Openreach to deliver high levels of service or compromise our plans and ambition to deliver further Ethernet service improvements going forward.

2 Overview

A. INTRODUCTION

28. At Openreach, we recognise that businesses throughout the UK rely on leased lines as essential components of their communications systems, and to support the provision of mobile telephone and fixed residential broadband services. Openreach fully supports, and indeed shares, Ofcom's main objectives to ensure efficient outcomes for consumers, to promote effective competition and to foster innovation in the interests of consumers.

29. However as we show below, we believe Ofcom is misguided in seeking to impose a new dark fibre remedy on the basis of market definitions and SMP assessments developed in order to impose temporary and urgent SMP remedies and where the case for dark fibre, in addition to these temporary remedies, has not been demonstrated.

30. Ofcom is consulting on requiring BT to provide dark fibre for the period April 2018 to March 2019 (a period of one year); at the same time it is consulting for the first time on its market definitions and finding[5] of SMP in the Lower Bandwidth CISBO markets as set out in the 2017 BCMR Statement.

31. This market definition and market power determination has been adopted in order to impose a number of temporary SMP measures[6] (without prior consultation) on an "urgent" basis. This was due to the "exceptional circumstances" created by the CAT's ruling and order, which quashed Ofcom's market definition and SMP findings, the decision to impose a new dark fibre remedy (which had also been challenged on the appeal), as well as (at Ofcom's own instigation) all existing SMP remedies (creating a so-called "regulatory lacuna"), even though BT had not chosen to challenge them in the appeal.

32. This is the first time that Ofcom has used such powers, despite it having the option to address the regulatory lacuna through a voluntary arrangement with Openreach – as it has done in other similar circumstances - and Openreach's willingness to enter into such an arrangement to agree appropriate general remedies, specific access remedies, charge controls and minimum quality standards.

B. DARK FIBRE IS A HIGHLY CONTENTIOUS AND ENTIRELY NEW REMEDY, THE IMPOSITION OF WHICH (FOLLOWING A CHANGE IN OFCOM'S POSITION) WAS CHALLENGED BY A NUMBER OF PARTIES IN THE CAT

33. Dark fibre is a new specific network access remedy and is highly contentious, particularly because of the risk it poses for incentives to invest in fibre infrastructure. Ofcom previously (i.e. in the 2013 BCMR review) reached the view that it was not appropriate as a remedy on grounds of proportionality.[7]

34. Following the 2016 BCMR Statement (in which dark fibre was imposed by Ofcom following a change in policy), the remedy was appealed to the CAT by a number of parties including BT. BT challenged primarily on the basis that the remedy was flawed and disproportionate. In particular we considered that Ofcom had overstated the benefits of dark fibre and understated the risks, and had failed to take into account the difficulties and costs of reversing the dark fibre remedy once implemented.

35. The second part of BT's appeal of the 2016 BCMR decision (which related to the proportionality of the dark fibre remedy) was not heard in light of the CAT's ruling and order on the first part (concerning Ofcom's flawed approach to market definition). The fact that the Tribunal was not

[5] A market definition and market power determination which will apply until 31 March 2019.

[6] These comprise general remedies; specific access remedies; charge controls and minimum quality standards.

[7] BCMR Final Statement, March 2013, paras 1.40 to 1.45.

required to make any ruling does not change the fact that the remedy was challenged, and that the CAT's order (remitting all matters back to Ofcom) was expected to result in a full re-consideration by Ofcom of the merits of its case for introducing, for the first time, dark fibre.

36. There can be no inference that Ofcom's case for imposing the dark fibre remedy withstood the appeal; in reality, Ofcom's case was never heard because its market analysis underpinning this (and other) remedies was found to be unsound. It was expected that Ofcom would put this right, and consider the arguments and evidence on the need for dark fibre, instead of seeking to re-impose a remedy that is so hotly disputed without conducting a lawful market analysis.

37. Now Ofcom is proposing the introduction of the dark fibre remedy following an unfair process. In particular, Ofcom has adopted a severely constrained approach to consultation and engagement that is unfair and inconsistent with established Ofcom and EC guidelines and policies.

38. Ofcom is also relying on a new market definition that was published two weeks after the CAT's full judgment was published (indicating that the work was done without the benefit of the CAT's thorough analysis of Ofcom's earlier errors). The evidence which supports Ofcom's analysis has not been updated since 2016 BCMR (which relied on information gathered for the most part in 2014 with some limited updates in 2015), and any new evidence has not been clearly set out in the consultation, nor provided to BT on request.

39. Given that a dark fibre remedy would have irreversible effects, due to the impact it would have on CPs' business models and investment decisions, we consider that it is on any view premature to impose such a remedy on the basis of a market definition and SMP analysis which was conducted in haste for the purposes of imposing emergency temporary remedies to address the regulatory lacuna, particularly given that this may change when Ofcom has fully considered all the issues.

40. Ofcom is arguing that it is "modifying" the BCMR Temporary Conditions to add a dark fibre remedy (under s84(2) CA2003). This is not an appropriate approach: this is a completely new remedy (and one which has been explicitly challenged) not a simple "modification" of existing remedies.

C. THE CASE FOR IMPOSING DARK FIBRE IN THE PERIOD UP TO MARCH 2019 HAS NOT BEEN MADE; A FULL RE-CONSIDERATION IS REQUIRED BEFORE SEEKING TO RE-IMPOSE THIS REMEDY

41. There is no urgent need to impose this remedy that justifies the rushed and unfair process that Ofcom is adopting. Other network access remedies are in place in the short term, and dark fibre is an entirely new product (i.e. no issues are raised in terms of continuation of existing supply).

42. Nor does Ofcom explain the apparent urgency; it simply reiterates its belief that dark fibre would promote efficiency and better sustain effective competition than would be possible with active remedies alone (a position which has been challenged and which should be fully re-considered as part of the remittal which is underway, in light of the outcome of a soundly based, up-to-date market analysis and in light of a proper assessment of the case for dark fibre relative to other available remedies).

43. A full reconsideration by Ofcom is required in order to: (i) properly identify those markets in which Ofcom considers there to be competition issues to address; and (ii) properly assess whether dark fibre is required above and beyond the other network access remedies which Ofcom requires BT to provide, so-called "active" products (or indeed products which Openreach chooses to provide of its own volition which provide similar benefits as dark fibre).

44. Stakeholders should be properly consulted on prospective market definitions, not retrospectively asked to comment on market definitions and SMP findings that have been imposed without consultation under Ofcom's emergency powers.

45. Ofcom's approach is particularly unreasonable since it has already started work on the next full BCMR and has indicated in its draft 2018/19 plan that this consultation will be a work priority in Q1 2018/19.

D. A PROPER RE-CONSIDERATION OF THE MARKET IS REQUIRED; OFCOM HAS NOT IDENTIFIED A "SAFE HABOUR" IN THIS REGARD

46. Ofcom cannot justify its haste by appealing to a "safe harbour" argument – i.e. that dark fibre (if imposed) will only apply to markets in which Ofcom can (on the basis of available evidence) be "sure" that BT has SMP for the period to March 2019.[8]

47. Ofcom's market analysis, by its own admission, is partial and incomplete pending full consideration of the remitted matters. It is also only being consulted on retrospectively, after Ofcom has already announced that it is "sure" of its conclusions. For the purposes of the consultation, Ofcom continues to rely on its findings in 2016 BCMR subject to a number of quick fixes to deal with the Tribunal's criticisms.

48. These quick fixes do not, however, create a safe harbour. Ofcom's analysis is not prospective but relies to a large extent on data that has been out of date for nearly four years. The limited references to new evidence on rival infrastructure build (which appears to be based only on publicly available data) is inappropriately dismissed by comparing the recent build to Openreach's national volumes, rather than assessing it by reference to specific geographies. Fundamentally, Ofcom has not:

    a. conducted a SSNIP analysis starting from the relevant focal product (as required by the Tribunal) and by considering whether the focal product is likely to differ depending on market segment;

    b. considered the possibility of bandwidth breaks in the Lower Bandwidth CISBO market (e.g. a product market of bandwidths up to and including 100M extending to NGA, FTTx and cable);

    c. considered the impact of these possible product market changes on geographic market definition;

    d. considered the implications for any findings of market power and remedies of a fresh assessment of competitive conditions on a more consistent and granular basis as requested by the European Commission.

49. A full analysis of these issues might prove Ofcom's temporary finding on market analysis to be insufficiently conservative. Put simply, there are no short cuts and Ofcom's temporary finding on market definition and SMP poses a real risk of the dark fibre remedy over-reaching.

50. In any event, this approach is wrong in principle; Ofcom cannot retreat to safe territory as regard market boundaries in order to make a remedy it is determined to introduce look more proportionate. It must form a view on the appropriate market boundaries first (and independently of the issues of SMP and remedies) and then conduct its SMP and remedies assessment in the relevant markets.[9]

[8] 2017 BCMR Statement, para 2.20.

[9] As found by the CAT Judgment in BT's appeal against Ofcom's 2016 BCMR, para 394.

E. A PROPER RE-CONSIDERATION OF DARK FIBRE IS REQUIRED; THE CASE FOR A DARK FIBRE REMEDY ABOVE AND BEYOND ACTIVE REMEDIES IS NO CLEARER THAN IT WAS IN 2016 AND OFCOM WAS CHALLENGED ON THESE ISSUES; FURTHER, RESTRICTING THE USE OF DARK FIBRE TO BANDWIDTHS OF 1G AND BELOW IS NOT FEASIBLE

51. Ofcom cannot rely on arguments that there is a clearer case for introducing dark fibre than there was in 2016 to justify its unduly hasty approach.[10] In fact, Ofcom has not demonstrated that the benefits outweigh the costs in the short period up to March 2019, nor when taking a longer term view.

52. In assessing the relative costs and benefits, Ofcom plays the "counterfactual" game – i.e. justifying its next regulatory foray by reference to a counterfactual which has been shifted by the last foray, even though the last one has been quashed: for example, Ofcom observes that Openreach's development costs are already sunk (and are therefore to be considered irrelevant), which is a consequence only of the fact that Ofcom previously took an unlawful decision to impose a dark fibre remedy on the basis of its flawed 2016 BCMR.

53. We are concerned that Ofcom is seeking to move the counterfactual again by intervening in the short term in order to make any extension of dark fibre to VHB services following the 2016 BCMR look more proportionate. None of these incremental steps should be permitted; Ofcom must make its case for dark fibre, following a full market review, in the markets where it identifies competition concerns, on the basis of a counterfactual where dark fibre is not provided.

54. Ofcom wrongly presumes that BT can effectively enforce a limitation of the dark fibre remedy to Lower Bandwidth CISBO services through contractual restrictions. In fact, such a restriction (on which no evidence has been gathered and consulted on) would take time to negotiate, be susceptible to dispute and difficult to enforce effectively without significant investment in systems development, audit processes and suitably trained staff, all of which would add significantly to up-front and ongoing implementation costs.

55. More specifically, monitoring options have significant associated systems and development costs. Some would limit the distances that can be supported and would require access and local power. Others render the product akin to an active product. In fact, we estimate that the cost of monitoring every service would be economically unviable such that the existing EAD box and associated management is likely to be the cheapest solution. Before its change of thinking on dark fibre, Ofcom agreed that the challenge we face in effectively monitoring usage of a dark fibre product would be very significant.

56. Given the uncertainty surrounding effective enforcement, dark fibre usage will inevitably spread into the VHB segment (and the risks previously discussed in submissions to the CAT – particularly to rival infrastructure investors - would be triggered).

57. The benefits of the proposed dark fibre remedy are over-stated. They were never substantiated by Ofcom, even in a CISBO market with no bandwidth break. They are even less clear if (as suggested by Ofcom) take up is limited to the newly defined Lower Bandwidth CISBO market (i.e. there is a profound change in the scope of the remedy).

    a. Firstly, Ofcom admits uncertainty about the prevalence of equipment configurations (going forward) where cost savings would be available from switching to dark fibre.[11] This requires further investigation by Ofcom, not the exercise of regulatory judgment,[12] because there

[10] DFA Consultation, para 1.12.

[11] DFA Consultation, para 4.27: "we cannot be exactly sure of the proportions of forecast circuits that will belong to the different scenarios above, since there is no existing configuration to observe".

[12] DFA Consultation, para 4.27 "it is our current judgment, based on our understanding of the industry, that Scenario 1 is a common situation, and that Scenario 2 is less prevalent, but not unusual, whereas we consider Scenario 3 to be less prevalent and very rare".

are a range of scenarios in which savings would be small or non-existent. More fundamentally, if the most practicable and cost efficient monitoring solution (in order to effectively limit supply to circuits in the Lower Bandwidth CISBO market) is an EAD box, then it is not clear that any savings are available. Ofcom has not considered switching scenarios alongside monitoring scenarios to consider what (if anything) nets out.

b. Secondly, the quantum of cost savings is over-stated by Ofcom because: (i) the estimate wrongly includes indirect and overhead costs (which are not avoided with the removal of surplus equipment); (ii) the estimate is blended over all Ethernet equipment rather than the equipment specific to Lower Bandwidth CISBO services and (ii) costs going forward will be lower than the historic costs used as the basis of the estimate. Our estimate of equipment cost savings is around ✂ of that proposed by Ofcom.

c. Thirdly, Ofcom suggests that savings from different fault detection and repair processes "*may be positive*" but it is not sure.[13] We consider there to be significant additional fault detection and repair costs associated with the proposed intervention, not benefits.

d. Fourthly, the innovation benefits claimed by Ofcom are not specified any more than in the 2016 BCMR Statement. Ofcom simply asserts there is "*scope for innovation with Lower bandwidth CISBO services*" rather than providing specific examples which are relevant to this newly defined market. We continue to doubt that dark fibre provides significant flexibility for CPs to differentiate their business model (for the reasons set out in our evidence to the Tribunal which Ofcom has ignored).

e. Finally, a lessening of the regulatory burden on Openreach (for example a withdrawal of the SoR process)[14] will not deliver significant benefits where the SoR process will continue to be required for higher bandwidth services.

58. Put simply, Ofcom's take-up and cost saving estimates are highly uncertain and do not bear scrutiny. We make some reasonable adjustments and find these benefits to be considerably lower. The claims made about innovation are speculative and, to the extent they exist, can be realised in the absence of a dark fibre remedy by Openreach acting assertively to keep pace with innovation demand. Before its change of thinking on dark fibre in the 2016 BCMR, Ofcom agreed.[15]

59. More generally, we note a degree of inconsistency in Ofcom's positioning of the benefits (within the DFA Consultation and over time): on the one hand they are "*significant*" in comparison to alternative active products; on the other hand, they are not of sufficient magnitude to have a material impact on rival investment.[16] In evidence to the CMA last year, Ofcom expected limited impact (on CityFibre) as a result of dark fibre from changes to prices and demand in the market in which CityFibre operated (i.e. the Lower Bandwidth CISBO market) suggesting minimal take-up.[17]

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[13] DFA Consultation, para 4.33.

[14] DFA Consultation, para 4.60.

[15] CAT Judgment in *Colt v Ofcom*, November 2013 paragraph 100. "OFCOM's response to these claims was, in essence, that by and large BT had "kept pace" with the demands of innovation…and that business connectivity in the UK was, in Colt's own response to the June BCMR Consultation "world class". OFCOM further claimed that active remedies could deliver similar benefits in innovation."

[16] DFA Consultation, para 4.76

[17] Witness Statement of Peter Culham in Case 1261 CityFibre v Ofcom, 17 November 2016, para 104 "Ofcom carefully assessed the impact of the dark fibre remedy on CityFibre's business (as well as the businesses of other rival infrastructure operators). Ofcom concluded that the dark fibre remedy would not materially affect the prices of and demand for the connectivity used by the great majority of CityFibre's customers, since they operate in sectors which currently consume bandwidths of 1G and below. Given this, its impact on CityFibre's business would be limited.'

60. The risks and costs of the proposed dark fibre remedy are understated by Ofcom as set out below.[18]

    a. Firstly, there will be additional costs for Openreach in dealing with faults resulting from the removal of equipment (which Ofcom claims will drive cost savings). Ofcom asserts that CP have "*comparable capabilities to detect, locate and repair faults*".[19] We disagree; CPs cannot replicate the ability of Openreach to monitor (remotely) on which side of the Openreach demarcation points a fault resides, and thereby distinguish between equipment faults (CP's responsibility) and fibre faults (Openreach's responsibility). There is a significant risk that this will result in an increase in unproductive visits by Openreach where a fault has been incorrectly diagnosed.

    b. Secondly, the impact on investment by rivals is wrongly dismissed. If there is take-up of dark fibre (as claimed in the DFA Consultation) and if rival infrastructure providers provide connectivity which is a substitute for dark fibre applied in the Lower Bandwidth CISBO market – which Ofcom has said, in evidence to the CMA, is the case for CityFibre – then an impact must be expected. It has not, however, been investigated by Ofcom.

    c. Thirdly, it is not the case that the risks identified in the 2016 BCMR Statement (including the impact on rival investment in VHB services) are largely now irrelevant because there is no obligation on BT to introduce dark fibre to supply VHB services. These risks are still relevant because BT will face a range of difficulties in effectively enforcing a contractual restriction to limit dark fibre usage to the Lower Bandwidth CISBO market. In light of this, the incentives of rivals to invest could be adversely affected because the value of their investment will depend on BT effectively enforcing a contractual restriction over which they have no control.

    d. Lastly, Ofcom significantly under-estimates the direct implementation costs that would be incurred by Openreach and, in particular, the costs of enforcing the bandwidth restrictions.

61. Nor is Openreach ready and able to supply dark fibre in the timeframes proposed by Ofcom. The product specified for the purposes of Ofcom's proposed intervention is different to the product that BT was required to introduce in October 2017. Importantly, it requires the negotiation of contractual restrictions which are not straightforward (and, in all likelihood, unworkable) as well as a new reference offer. We would also need to engage in operational trials, which were not undertaken as part of the previous process. Ofcom has not sought any evidence (as far as Openreach or BT is aware) on these issues

F. OFCOM'S ATTEMPT TO IMPOSE DARK FIBRE IN THE MANNER PROPOSED IS UNREASONABLE GIVEN THE NEED FOR A FULL RE-CONSIDERATION OF THE MARKET AND THE APPROPRIATE PACKAGE OF REMEDIES (WHICH, IN ANY EVENT, IS UNDERWAY)

62. Ofcom is considering the matters remitted back to it and this will include a consideration of what overall package of remedies is appropriate for the business connectivity market in the next BCMR (commencing April 2019).[20] Ofcom has an opportunity, therefore, to fully consider all of these issues.

63. It is more reasonable and appropriate, given the absence of any urgent case for action to introduce a dark fibre remedy and the irreversibility of such an approach, to undertake the required analysis, taking into account the arguments and evidence raised as part of the dark fibre

[18] In the time available, we have not been able to estimate the impacts on the proposed Xs; as a result, the section of this response relating to the LLCC does not quantify the impact these factors would have on the charge control.

[19] DFA Consultation, para 4.73.

[20] DFA Consultation, para 1.16.

appeal by a range of parties, as well as new evidence gathered and consulted on as part of the next review of the business markets.

64. Put simply, a lot can be learnt by doing a full market analysis, and Ofcom has not shown that the expected benefits of a temporary intervention sufficiently outweigh the costs to compensate for the lost option value of proceeding with an effectively irreversible remedy without the benefit of this information.

65. If Ofcom still decides to proceed, it risks a further round of needless litigation including applications for interim measures whilst Ofcom conducts its full BCMR.

66. Considering the appropriateness and proportionality of dark fibre properly in the next full BCMR would only delay any subsequent decision to impose dark fibre by a year at most. There is no material harm to customers as a consequence of such a delay and any disbenefits are easily outweighed by the advantages of conducting a proper and lawful review.

67. Indeed it is unclear whether Ofcom really anticipates any material benefits arising during the temporary period, or whether, as suggested above, it is simply seeking to shift the counterfactual (i.e. get Openreach to sink further development costs) in order to make a fuller implementation look more proportionate after the market review.

G. LLCC

68. With regard to the LLCC which Ofcom has imposed in the 2017 BCMR Statement, we believe Ofcom should separately model the new basket costs rather than make approximate adjustments to the old basket model to take account of its new DFA proposals (substitution effects and implementation costs) and its new market definition (re-defined core and additional CBD boundaries). Ofcom proposes Xs for two scenarios, i) if DFA is implemented and ii) if DFA is not implemented. If Ofcom does not build a new model, it should adjust its proposals in both scenarios: if DFA is implemented the X should be 11% rather than 13.5%, and if DFA is not implemented the X should be 14% rather than 15.75%.

Adjustments required in both scenarios - increased Cumulo and pensions costs

69. The Cumulo forecast in Ofcom's 2017 LLCC model is based on an extrapolation of a Rating Valuation from 2014/15. Ofcom is aware that there has been a significant increase in the Rateable Value of BT's network and therefore Openreach will incur significantly increased Cumulo costs in 2018/19 compared to the 2014/15 baseline. We estimate that Ofcom's forecast BCMR Cumulo cost is therefore understated by ✂ for 2018/19, and this results in an overstatement of X by ✂ .

70. Ofcom's forecast of pensions servicing costs is an extrapolation of 2014/15 costs. These costs rose substantially (by ✂) between 2014/15 and 2016/17. As explained in our response to Ofcom's September 2017 WLA consultation, we estimated the charge for 2017/18 would be ✂ more than the 2016/17 charge based on the most recent valuation review. We estimate that Ofcom's forecast BCMR pensions cost is therefore understated by ✂ for 2018/19, and this results in an overstatement of X by ✂ .

Adjustments required if DFA is not implemented – remove unnecessary goal seek

71. The model allows the single year X to be calculated for 2018/19 in both scenarios and we consider it unnecessary to use the goal seek function as proposed by Ofcom.[21] We have adapted Ofcom's model to allow for one-year Xs to be calculated for 2018/19 using assumptions about the price trends for 2016/17 and 2017/18. Based on this approach the proposed absolute value of the X would be reduced by 0.25 percentage points.

[21] 2017 BCMR Statement, para 5.41

Adjustments required if DFA is implemented – reduced active volumes due to a requirement for a CBD main link volumes adjustment and increased substitution effects from aggregation and 100M services

72. Ofcom's assumptions on cannibalisation do not take into account the effects of aggregation on EAD 100M volumes (substitution from EAD to DFA). Ofcom also makes no main link volume substitution adjustment (it does so for EAD rentals) for its new CBDs – clearly this is wrong. We believe these impacts should be taken into account in Ofcom's base case calculations: this would reduce active volumes forecasts and increase the level of stranded assets, both resulting in higher forecast costs. We estimate these adjustments would be likely to have a one percentage point impact on the value of the X.

H. MINIMUM SERVICE LEVELS

73. Since Ofcom imposed Ethernet MSLs, in the 2016 BCMR, Openreach has significantly improved key elements of Ethernet service, for example by cutting the time taken to provide circuits and improving the management of complex circuits which are the most complex to deliver.

74. In Ofcom's 2017 BCMR Statement dated 23 November 2017, without any prior consultation or warning, Ofcom re-imposed quality of service remedies, including MSLs and Key Performance Indicators ("KPIs"), which Ofcom had first imposed on Openreach in the 2016 BCMR.

75. Some changes have been made to these remedies, arising from Ofcom's amendments to the product and geographic market definitions. There is also a revised MSL compliance period of 1 December 2017 to 31 March 2019 inclusive. However, the MSLs and KPIs are largely the same as those imposed in 2016, including the overall MSL framework, the MSL targets and the KPI measures.[22]

76. Despite the ongoing transformation referred to above, Ofcom has been aware for some considerable time that Openreach is extremely concerned that targets for two of the MSLs (certainty and upper percentile) are set at levels that it will not be possible for Openreach to meet due to factors that are outside of Openreach's control.[23] This is despite significant improvement in the provision of Openreach's services.

77. Openreach has had for some time new information drawn from the significant operational insight which we have gained since the MSLs were first imposed plus Openreach has sought independent analysis ✂ , to consider the factors that lead to the certainty and upper percentile MSLs not being achievable.

78. In these circumstances, Openreach believes that Ofcom should re-consult and amend the targets for the certainty and upper percentile MSLs. This step is needed to ensure that the MSLs in the remaining compliance period are proportionate and only properly targeted at situations that require intervention.

79. Our specific suggestions are that the certainty MSL target should change to ✂ (from 88%) and the upper percentile MSL should change to no more than ✂ of circuits delivered in more than 118 working days from no more than 3% of circuits delivered in more than 118 working days.

80. These are reasonable proposals and would not in any way weaken the continued incentives on Openreach to deliver high levels of service. Indeed, this request is made in the context of Ethernet service levels that have been transformed by Openreach's improved operational focus and

[22] The certainty target for the new MSL compliance period is a weighted average of the previous regime's year 2 and 3 targets.

[23] Openreach has been raising concerns with Ofcom about the feasibility of some of the MSLs since November 2016.

control, and where Openreach has plans and the ambition to deliver further enhancements going forward.

81. Regarding the KPIs, Openreach has a specific concern that the timing of the current KPI obligations as described in the Temporary Conditions Statement cannot be met. This is because Openreach system changes are required in order to support the necessary detailed changes to the KPIs. These system changes (and subsequent testing) cannot be completed in the timescales required by Ofcom. Openreach would like to urgently discuss this matter with Ofcom so that a sensible solution can be agreed that does not leave an unfair risk of non-compliance.

82. ✂

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83. We have commented on the MSLs within the very short timescales allowed to respond to the DFA Consultation and so these observations are provided in a comparatively high-level summary form. Openreach would welcome the opportunity to discuss these matters further with Ofcom, and make more detailed representations.

3 Legal Process

A. BACKGROUND

84. This section outlines our legal objections to the process Ofcom has adopted towards this consultation and our concerns that it does not conform with Ofcom's legal duties. In summary:

    a. We consider that the market definition and SMP analysis put forward by Ofcom does not address the errors identified by the CAT and is materially inadequate and that therefore it is improper and/or unlawful for Ofcom to seek to impose a new DFA remedy on this basis. These concerns are outlined further in Section 4 below.

    b. Even assuming that the market definition and SMP assessment which Ofcom has carried out was materially sound, which for the avoidance of doubt we do not consider it is, it is far from clear that Ofcom has met the required legal tests before it may impose the new DFA remedy; in such circumstances we consider the rushed introduction of a new DFA remedy is ill-advised. These concerns are outlined further in Section 5 below.

    c. We have a number of further concerns with regard to the procedure by which Ofcom has approached and is continuing to approach this consultation; in short it does not inspire confidence that Ofcom is approaching this consultation with an open mind.

85. To provide some context to Openreach's concerns, we do not deny that in principle we may have SMP in relation to some or all of the Lower Bandwidth CISBO Services in certain geographic areas. However, we are concerned by the multiple references that Ofcom makes to its current analysis being "conservative". We do not believe that Ofcom has yet addressed the errors identified by the CAT, gathered relevant and up-to-date evidence or conducted the analysis required to make such an assertion.

86. Indeed it is concerning that Ofcom continues to rely on market data from 2014 when our market insight is that there are certain geographies which have become significantly more competitive compared to 2014. In order to do a proper assessment of where BT has SMP, Ofcom must collate new and updated evidence on among other matters, market shares and network presence, something which it has not yet done (at least from Openreach). Where it has been possible to collate information within the timescales of preparing this consultation response, we have indicated where we consider there have been significant shifts in competition conditions.

87. Given Ofcom does not yet have sufficient data to decide that its current market definition and SMP assessment is conservative, there is a significant risk of regulatory overreach. Ofcom can only lawfully impose a DFA remedy in areas where BT is found to have SMP; it cannot impose such a remedy in the areas that are competitive. Further, where BT has SMP is highly relevant to the question of whether a DFA remedy is justified. In order for Ofcom to decide whether a DFA remedy is justified it must demonstrate that it is necessary and that its benefits outweigh its risks (i.e. that it is proportionate) and it is not possible to conduct a sound analysis of its necessity or of the benefits and risks without a robust SMP assessment.

88. Given that a DFA remedy would mark a profound shift for the industry, we consider that it is premature to impose such a remedy on the basis of a market definition and SMP analysis which was conducted in haste for the purposes of imposing emergency temporary remedies to address the regulatory lacuna which had arisen as a result of the CAT's judgment, particular given this may change when Ofcom has fully considered all the issues.

89. In the circumstances, and given the concerns we have regarding Ofcom's market definition and SMP analysis, we urge Ofcom not to proceed with its current proposals and instead to carry out a thorough analysis of these issues in the next BCMR.

B. CONCERNS REGARDING THE PROCESS FOR ADOPTING THE 2017 STATEMENT AND PROCEEDING WITH THE DFA CONSULTATION

90. The majority of this consultation response is dedicated to the substantive concerns we have regarding Ofcom's current approach to market definition and SMP assessment, and the legality of Ofcom's proposals to introduce a DFA remedy. However, we also have significant concerns about the process adopted by Ofcom since the publication of the CAT's Ruling on 26 July 2017 and the process it is continuing to adopt with regard to this DFA Consultation.

91. We are surprised by Ofcom's failure to engage with us both since the CAT first issued its Ruling on 26 July 2017 and following publication of the CAT's judgment, given the process which it has now adopted. We are particularly surprised by Ofcom's reference at footnote 13 of the 2017 BCMR Statement that "*we have not received an offer of a voluntary arrangement from BT*".

92. In correspondence from Ofcom to BT following the CAT's Ruling, Ofcom made clear that it "*needed to see the reasoning in the Tribunal's judgment before [it] could decide what next steps it is appropriate to take, over both the short and long term*".[24]

93. Further, in correspondence between Ofcom and CityFibre, Ofcom had noted that "*other than in respect of the launch of the dark fibre remedy, we consider that it would be premature to discuss any further steps in advance of receiving the judgment*".[25]

94. These statements aligned with our understanding from conversations between individuals at Openreach and Ofcom that Ofcom would not be in a position to discuss the ramifications of the CAT's Ruling until the CAT had published its fully reasoned judgment. We are therefore somewhat surprised by Ofcom's assertion that it did not receive an offer of a voluntary arrangement from Openreach; all public and private indications which Openreach was receiving from Ofcom were that it was not yet in a position to discuss what arrangements might be put in place.

95. Ofcom notes that it does not consider it would be appropriate to address the concern through seeking to negotiate voluntary commitments from Openreach.[26] This is an odd position to adopt, given this is the way in which regulatory lacunas have tended to be approached by Ofcom previously (e.g. the current arrangements which are in place with regard to the WLA market, or the arrangements which Openreach agreed with Ofcom between the expiry of the 2013 LLCC on the 31 March 2016 and the entry into force of the 2016 LLCC on 1 May 2016). Indeed, Openreach would have been prepared to enter into a voluntary interim arrangement with Ofcom to address the regulatory lacuna which would arise as a result of the CAT's Order and we are disappointed that it was not given the opportunity to discuss such a possibility with Ofcom.

96. On 16 November 2017, Ofcom for the first time indicated its intention to use emergency powers to address the "*regulatory lacuna*" arising as a result of the CAT quashing significant parts of the BCMR – it planned to put in place an emergency regime without prior consultation.[27] However, in doing so, Ofcom is required with full reasons to meet the statutory requirements of:

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[24] Letter from Ofcom to Mark Shurmer, Openreach, 8 August 2017. It has of course subsequently transpired that Ofcom was working on the DFA Consultation document and the underpinning temporary market definition and SMP findings for much of the period since the Tribunal indicated its decision in July 2017 (see page 25 of the transcript of the CAT hearing on 20 November 2017, available on the CAT website.)

[25] Letter from Ofcom to CityFibre, 3 October 2017.

[26] 2017 BCMR Statement, para 1.28.

[27] Article 7 of Directive 2002/21/EC provides in relevant part: "9. In exceptional circumstances, where a national regulatory authority considers that there is an urgent need to act, in order to safeguard competition and protect the interests of users, by way of derogation from the procedure set out in paragraphs 3 and 4, it may immediately adopt proportionate and provisional measures. It shall, without delay, communicate those measures, with full reasons, to the Commission, the other national regulatory authority, and BEREC. A

a. exceptional circumstances; and

b. an urgent need to act in order to safeguard competition and protect the interests of users.[28]

97. We do not consider that Ofcom met those basic statutory requirements:

a. A regulatory lacuna is not a novel situation and is in no way exceptional. As discussed above at paragraph 95, Ofcom has previously resolved such periods without having resorted to such extreme measures. As discussed above at paragraphs 91 to 95, despite our willingness to do so, Ofcom was unwilling to engage with us and other parties regarding any voluntary arrangements.

b. Further, Ofcom could have and should have consulted as soon as possible after the Ruling and before the Judgment. It is therefore entirely inappropriate that Ofcom be able to rely on the emergency powers when the requisite urgency was exclusively of Ofcom's own making.

c. Finally, there is no requisite imminent harm to consumers to merit the (defective) urgent action above. Indeed, many of our customers are on contracts with terms over one year and as long as seven years. Further, Openreach introduced leased line price reductions on 1 October 2017, demonstrating our commitment to good outcomes for our customers.

98. This surprising conduct of Ofcom has continued in the run up to the issuance of its consultation proposals:

a. That intention to utilise emergency powers and act without consultation when issuing the 2017 BCMR Statement was communicated only to BT's and other parties' lawyers within the confidentiality ring that had been set up for the purposes of the CAT proceedings. Despite repeated requests by these lawyers, Ofcom prohibited them from sharing the information with anyone at BT or Openreach who was outside the confidentiality ring, insisting that the "the information is market sensitive".

b. BT's representatives raised concerns regarding unfairness in the process followed by Ofcom. In light of those concerns, they requested that the CAT defer making the agreed order so as to allow either (i) BT's lawyers to make representations on the basis of further instructions from others in BT or Openreach, or (ii) Ofcom to make public its intentions in the form of a 'minded to' statement. However, Ofcom rejected both of these suggestions, refusing to give permission for its plans to be shared with anyone outside the confidentiality ring or to publish them on a 'minded to' basis.

c. Following a private hearing on 20 November 2017, the CAT issued a ruling the same day ([2017] CAT 26) in which it decided to make the agreed order forthwith. It held that "*the question of how Ofcom should respond to the quashing by the Tribunal of its earlier decisions is one which is for Ofcom to answer as regulator. It is not an issue which falls within the scope of this Tribunal's jurisdiction on the appeal against the earlier decision. Moreover, this Tribunal simply does not have the evidential basis upon which to decide how to direct Ofcom to respond to the quashing of the earlier* decision*.*"[29] The CAT emphasised that it was "*in no position at this hearing to form a view as to whether Ofcom is or is not justified in acting as it proposes, and specifically whether Ofcom is or is not*

decision by the national regulatory authority to render such measures permanent or extend the time for which they are applicable shall be subject to the provisions of paragraphs 3 and 4."

[28] Article 7(9) of Directive 2002/21/EC

[29] [2017] CAT 26, para 15.

acting in breach of its statutory mandate or natural justice. Those would again be matters for another Tribunal or court."[30]

d. Following the hearing, Ofcom maintained its position of refusing to let BT's lawyers in the confidentiality ring share the information with the rest of the business prior to its publication.

e. As such, BT and Openreach first learnt of Ofcom's emergency measures and the DFA Consultation was when Ofcom published three documents on 23 November 2017:

   i. The Revocation Notice, revoking the existing conditions imposed by the BCMR;

   ii. The 2017 BCMR Statement setting out the new conditions to be imposed under emergency powers; and

   iii. The DFA Consultation, seeking views on Ofcom's proposals on adding DFA to the remedies for business connectivity markets, as well as on the market definition and SMP findings adopted in the 2017 BCMR Statement.

f. On 28 November 2017 BT wrote to Ofcom, seeking urgent answers to seven questions raised by the publication of the 2017 BCMR Statement and the DFA Consultation. In particular, the letter:

   i. Expressed concern that Ofcom's analysis of market definition in the 2017 BCMR Statement (and therefore also in the DFA Consultation) was substantially incomplete, given that it (i) failed to address the shortcomings identified in the CAT Judgment, and (ii) failed to comply with the European Commission's Guidelines on market analysis and the assessment of SMP[31] ("Commission Guidelines"). BT therefore sought confirmation that Ofcom was carrying out "a full market definition and SMP consultation" and that any decision resulting from that would be based on fully up-to-date evidence and address the concerns identified in respect of the 2017 BCMR Statement analysis.

   ii. Requested confirmation that Ofcom also intended to consult on the appropriateness of the other SMP remedies set out in the 2017 BCMR Statement, not just on DFA.

   iii. Queried what the "new evidence" was that Ofcom referred to in para 1.8 of the 2017 BCMR Statement and requested copies thereof.

   iv. Noted that the timeframe for responses prescribed in the DFA Consultation "is far too short for a consultation of this magnitude" and requested that, in line with Ofcom's own guidelines, it be extended to a period of ten weeks.

g. Ofcom responded on 30 November 2017. The brief response did not provide full answers to the questions posed in BT's letter of 28 November 2017 but indicated that:

   i. Ofcom "will be consulting on a new analysis of the business connectivity markets and have begun work internally on that process", although no timeframe was given.

   ii. The scope of the DFA Consultation "is as explained in the document".

   iii. The consultation period would not be extended; it was "in the interests of competition and consumers for a decision on this matter to be taken within an appropriate period."

[30] [2017] CAT 26, para 18.

[31] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communication networks and services of 11 July 2002; available at: http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52002XC0711(02)&from=EN

iv. Ofcom would consider "*a* specific *request for a piece of evidence*".

h. In response, on 5 December 2017, we reiterated that BT's position that giving respondents only approximately 4 weeks to respond was wholly unreasonable and made clear that we were requesting all new evidence upon which Ofcom relied.

i. Ofcom responded on 12 December 2017, repeating that it considered 4 weeks to be sufficient and noting that:

i. It had relied on those parts of Ofcom's reasoning and analysis from the 2016 BCMR which the Tribunal's judgment did not overturn, taking into account new evidence that has arisen since the completion of the 2016 BCMR.

ii. Given the urgent nature of the decision, it did not conduct a prior evidence gathering phase of the type which it will now undertake as part of the new analysis of these markets.

iii. The references to new material from Virgin Media and CityFibre are only to publically available information.

99. We are concerned that Ofcom's new proposals do not meet the basic requirements of a lawful consultation which were formulated by Stephen Sedley QC (as he then was) and adopted by the Court in R v Brent LBC, ex p Gunning (1985) 84 LGR 168. They were approved by the Supreme Court in *R (Moseley) v Haringey LBC* [2014] UKSC 56, [2014] 1 WLR 3947, para 25. In order for consultation to be fair, a public body must ensure that:

a. The consultation must be at a time when proposals are still at a formative stage;

b. The proposer must give sufficient reasons for any proposal to permit of intelligent consideration and response;

c. Adequate time must be given for consideration and response; and

d. The product of consultation must be conscientiously taken into account when finalising the proposal.

100. In our view, the DFA Consultation simply does not comply with these principles.

I. Proposals not at a formative stage

101. The manner in which the DFA Consultation has come about, along with the nature of the proposals and timetable, do not inspire confidence that the matter remains at a formative stage. In particular, the proposed implementation date of 1 April 2018[32] does not give a realistic opportunity to adapt the proposed DFA remedy so as to reflect (i) a proper, lawful, market definition and SMP analysis (which addresses the errors found by the CAT), and (ii) ensure adequate consultation on that proposal, taking into account the views of the respondents.

102. Further, Ofcom, even before publishing the DFA Consultation, has made clear both in correspondence with BT and in public statements that it "*remains of the view that dark fibre offers significant benefits for competition and consumers*"[33] and that it sees "*opportunities for "dark fibre", BT's dormant cabling that can be used by competitors".*[34]

103. In the circumstances, Ofcom's proposal appears to amount to little more than an attempt to reiterate the remedy it imposed under the BCMR (and which it agreed could not survive the CAT's

[32] DFA Consultation, para 3.13.

[33] Letter from Ofcom to Mark Shurmer, Openreach, dated 8 August 2017.

[34] "UK's digital economy will be built on fair foundations", Sharon White, Ofcom, published in the Financial Times on 1 October 2017 (https://www.ft.com/content/9c45f9ce-a535-11e7-8d56-98a09be71849)

findings), not a fresh proposal that is still at a "*formative stage*" and in relation to which Ofcom retains an "*open mind*."[35]

II. Ofcom's proposal insufficiently reasoned to allow stakeholders to give them proper consideration

104. The DFA Consultation fails to set out sufficient reasons for Ofcom's proposal to allow us to properly consider and respond to them.

105. As set out above, the entire proposal is based on a temporary market definition and SMP analysis, which was hastily adopted, is materially inadequate, and was not prepared in line with the relevant guidance, including the Commission Guidelines. This materially defective market definition and SMP analysis cannot form the basis of a consultation proposal for, far less the imposition of, an entirely new remedy, least of all one with far-reaching and novel consequences such as the DFA remedy. In order to carry out such a consultation, Ofcom first needs to undertake a full market definition exercise, including gathering fully up-to-date evidence from across the market using its powers under section 135 and reflecting the CAT's concerns.

106. Ofcom is in a unique position which allows it to gather evidence from all market participants and take an overall view of that evidence. Such an exercise cannot be pre-empted or avoided by consulting on preliminary and incomplete proposals, as Openreach, BT and the other respondents necessarily lack essential parts of the picture, particularly where Ofcom is not seeking to impose temporary or urgent SMP remedies, which is the case with the proposed DFA remedy under consideration.

107. Further, the DFA Consultation fails to reflect the detailed criticism of the DFA remedy raised in the context of the CAT appeal by a number of parties. While the CAT did not need to deal with these issues – given its findings on market definition – that does not explain Ofcom's failure to address them in the context of what purports to be a fresh consultation. In order to give us an opportunity to comment sensibly on the new proposals, it is incumbent on Ofcom to engage first with the detailed criticisms that have already been made in respect of the old proposal. Instead of doing so, Ofcom is proceeding as if the matters raised had already been considered by the CAT and had been resolved in Ofcom's favour. They have not.

108. Finally, as with the market definition underpinning it, the proposed remedy has not been modelled on fully up-to-date evidence. Given the scope and likely impact of the proposal, Ofcom first had to gather and reflect the current evidence base in order to allow sensible comment. It has not done so.

109. In order to give us a proper opportunity to consider and respond to the proposal, Ofcom must first undertake a full and proper market definition and SMP analysis, reflecting the CAT's findings, complying with the legal requirements including the Commission's Guidelines, and obtaining and reflecting up-to-date evidence. Only on the basis of such an exercise can the proposals for the DFA remedy then be put forward in a manner that (i) presents a remedy which could realistically be lawfully imposed, and (ii) allows intelligent consideration and response in the context of a consultation. Absent such an exercise, we do not have the information required to provide a meaningful response.

III. Inadequate consultation period

110. The DFA Consultation stipulates at para 1.14 that "*the deadline for responses is 29 December 2017*". This allows a consultation period of only just over a month, the bare minimum ordinarily required under the Communications Act 2003 ("CA 2003").[36] No advance warning of the consultation was given to Openreach or BT (other than to the two BT lawyers in the CAT

[35] Cf. *R (Dudley MBC) v SSCLG* [2012] EWHC 1729 (Admin), paras 66-68 and the authorities cited therein.

[36] Ss 48A(4) and 80A(6) CA 2003.

confidentiality ring for Case 1260, who could not disclose it to anyone) and others affected by it. Further, the deadline falls into the middle of the holiday period when many key staff members are away on pre-booked annual leave, thus in effect shortening the response period further.

111. Ofcom's policy on consultations, "*seven principles that it follows for every public written consultation*", are set out in Annex 2 of the DFA Consultation.[37] It states:[38]

> ***Before the consultation***
>
> *1. Wherever possible, we will hold informal talks with people and organisations before announcing a big consultation, to find out whether we are thinking along the right lines. If we do not have enough time to do this, we will hold an open meeting to explain our proposals, shortly after announcing the consultation.*
>
> ***During the consultation***
>
> *2. We will be clear about whom we are consulting, why, on what questions and for how long.*
>
> *3. We will make the consultation document as short and simple as possible, with a summary of no more than two pages. We will try to make it as easy as possible for people to give us a written response. If the consultation is complicated, we may provide a short Plain English / Cymraeg Clir guide, to help smaller organisations or individuals who would not otherwise be able to spare the time to share their views.*
>
> *4. We will consult for up to ten weeks, depending on the potential impact of our proposals.*
>
> *5. A person within Ofcom will be in charge of making sure we follow our own guidelines and aim to reach the largest possible number of people and organisations who may be interested in the outcome of our decisions. Ofcom's Consultation Champion is the main person to contact if you have views on the way we run our consultations.*
>
> *6. If we are not able to follow any of these seven principles, we will explain why.*
>
> ***After the consultation***
>
> *7. We think it is important that everyone who is interested in an issue can see other people's views, so we usually publish all the responses on our website as soon as we receive them. After the consultation we will make our decisions and publish a statement explaining what we are going to do, and why, showing how respondents' views helped to shape these decisions.*

112. In general, "*a decision-maker must follow his published policy (and not some different unpublished* policy*)* unless there are good reasons for not doing so" (R (Lumba) v SSHD [2011] UKSC 12, [2012] 1 AC 245, para 26). This is a common law duty, departure from which can give rise to "a violation of principles of public law."[39] Misinterpreting, and therefore misapplying, a policy amounts to an error of law.[40]

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[37] Also available at https://www.ofcom.org.uk/consultations-and-statements/how-will-ofcom-consult

[38] Emphasis added.

[39] Lumba, paras 202 and 313; to similar effect, see also *R (Munjaz) v Mersey Care NHS Trust* 2005] UKHL 58, [2006] 2 AC 148 and *R (Davies) v Revenue and Customs Commissioners* [2011] UKSC 47, 1 WLR 2625.

[40] See, for example, R (Manchester Ship Canal Co Ltd) v Environment Agency [2012] EWHC 1643 and Gransden v Secretary of State for the Environment (1987) 54 P & CR 86.

113. In the present case Ofcom has acted in breach of its policy on consultations in two important respects.

114. Firstly, Principle 1 reflects the importance of preliminary consultation and advance warning for those likely to be affected by a consultation. While the policy envisages exceptions being made for lack of time, this was not an issue here. As acknowledged at the CAT hearing on 20 November 2017, Ofcom worked on the DFA Consultation document and the underpinning temporary market definition and SMP findings for much of the period since the Tribunal indicated its decision in July 2017.

115. Ofcom maintained that the information regarding the DFA Consultation was "market sensitive" and thus refused to give Openreach or BT (save for representatives within the confidentiality ring) any indication it was forthcoming prior to publication on 23 November 2017. Yet, as BT's lawyers in the confidentiality ring noted, it would have been possible to either make a public 'minded to' statement to garner initial comments, or to conduct informal preliminary discussions with key individuals on the basis of appropriate constraints. As regards the latter, Ofcom refused to do so on the basis that it did "not consider it appropriate to enter into bilateral confidentiality undertakings with additional persons at Openreach or BT or any other parties, so as to allow those particular parties to have advance notice of the imposition of the temporary regime and an ability to make representations, neither of which are available to the market in general."[41] As for the 'minded to' process, Ofcom's view was that "this would simply attract a large number of representations which Ofcom could not sensibly hope to treat with the seriousness which they would doubtless deserve over a short two week period."[42]

116. These justifications for refusing to engage with Openreach or BT before the consultation are hard to reconcile with the approach set out in Principle 1 of Ofcom's policy on consultations. In particular, it is surprising that despite the lengthy preparatory work of Ofcom, no preliminary indication of any kind could be given to Openreach, BT and others, so as to allow them to prepare appropriately for an important consultation. Further, especially in respect of the DFA Consultation (which was not in any way tied to the hand down date of the CAT's judgment), we do not consider the fact that a 'minded to' notice might engender significant substantive responses is a valid reason for refusing to countenance such a process.

117. Secondly, Principle 4 states that consultations will run "*for up to ten weeks, depending on the potential* impact *of our proposals.*" The sole criterion given for the duration of the consultation is thus the impact of the proposed measures. In the present case, there can be no doubt that the impact of introducing a DFA remedy for the first time would be very significant.

118. Ofcom relies on the reasons for the duration of the consultation summarised at para 1.14 of the DFA Consultation, which states:

> *In the light of the above we are consulting on whether to introduce a dark fibre remedy for the period April 2018 to March 2019. We are consulting for a period of just over one month and the deadline for responses is 29 December 2017. In considering an appropriate duration of the consultation period, we have taken into account that the proposed dark fibre remedy is based to a large extent on the design and analysis of risks and benefits that were subject to extensive consultation under the BCMR 2016. We also recognise that potential purchasers, who had readied their operations to take a dark fibre product, need clarity on the course of regulation. We aim to notify a draft statement setting out our conclusions in light of the consultation responses to the European Commission in early 2018, followed by a final statement before the end of the first quarter of 2018.*

[41] [2017] CAT 26, para 9.

[42] [2017] CAT 26, para 10.

119. It is apparent that this reasoning is not based on the "*potential impact*" of Ofcom's proposals. To similar effect, Ofcom's letter of 30 November 2017 identifies "the interests of competition and consumers" as a reason for the short consultation period but does not deal with the potential impact of the proposals. Ofcom has failed to justify the short consultation period by reference to the only criterion identified in its policy, thereby failing to give proper consideration to how long the consultation period should be.[43] Contrary to Principle 6, no explanation has been given for this departure from its policy.

120. Neither do the reasons that have been advanced by Ofcom offer a good basis – or a "*pressing reason*"[44] – for such a short consultation period or for the urgent need to introduce a DFA remedy by 1 April 2016:

    a. Seeking to rely on the earlier consultation on the DFA proposals made in the context of the BCMR, ignores the fact that (i) the market definition underpinning the DFA proposal in the BCMR was so flawed that it had to be quashed / revoked, (ii) the market definition which Ofcom is now using to underpin its proposals to impose a new DFA remedy are materially different from those which applied under the 2016 BCMR and as such the same considerations cannot be assumed to apply; and (iii) the DFA remedy itself was subject to extensive criticism, which was due to be considered by the CAT in the second part of the hearing (that became unnecessary because of the Tribunal's conclusions on market definition). Ofcom states that it "*used those parts of Ofcom's reasoning and analysis from the BCMR 2016 which the Tribunal's judgment did not overturn.*"[45] But that misses the point: the Tribunal did not need to consider the arguments on remedies because Ofcom's errors on market definition were so significant that the remedies premised on it could not survive in any event – a point Ofcom appeared to acknowledge in the hearing on 20 November 2017 and at a Case Management Conference on 4 December 2017. Further, in the DFA Consultation Ofcom apparently relied on "*new evidence that has arisen since the completion of the BCMR 2016*".[46] In the circumstances, the earlier consultations on DFA as proposed in the BCMR offer no basis for abridging the consultation period in respect of Ofcom's new DFA proposal or seeking to rush the imposition of a DFA remedy.

    b. Regulatory clarity for potential purchasers is desirable, but it cannot justify unduly abridging an important consultation process and the concomitant procedural protections. Any current uncertainty was caused by Ofcom's own errors in the BCMR. It is unlikely to be rectified by a rushed process that fails to engage with and address these errors and then afford a proper opportunity to consult on the proposed new approach.

    c. As regards the generic "*interests of competition and consumers*", these:

        i. Are best served by ensuring full and procedurally fair consultations are carried out, so as to allow for a proper evaluation of the proposed measures. As Lord Wilson noted in *Moseley*, the requirement of fairness "*is liable to result in better decisions, by ensuring that the decision-maker receives all relevant information and that it is properly tested.*"[47]

        ii. Were presumably considered in determining the general timescales envisaged in Ofcom's policy, including its ten week maximum period and its designation of "*potential impact*" as the criterion for determining the appropriate timeframe.

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[43] Cf. *R (Amvac Chemical) v SSEFRA* [2001] EWHC (Admin) 1011, [2002] ACD 34, para 63.

[44] *R (Luton BC) v SSE* [2011] EWHC 217 (Admin), [2011] Eq LR 481, para 94.

[45] DFA Consultation, para 2.6.

[46] DFA Consultation, para 2.6.

[47] *R (Moseley) v Haringey LBC* [2014] UKSC 56, [2014] 1 WLR 3947, para 24, citing Lord Reed in *R (Osborn) v Parole Board* [2013] UKSC 61, [2013] 3 WLR 1020, para 67.

iii. In any event cannot justify a departure from basic principles of fairness and due process

121. Finally, we note that the period given for responding to Ofcom's consultation on market definition and SMP assessment matters is inconsistent with the approach it has taken in all previous recent market reviews, as detailed in the table below. We do not consider that a consultation period of 5 weeks is sufficient for giving proper consideration to such complex matters.

Table 1

Consultations on market definitions and SMP assessment

Market review	Consultation published	Consultation period	Final Statement published
WLA 2018	31 March 2017	10 weeks	TBC
NBMR 2017	1 December 2016	12.5 weeks (extended to 17 weeks)	30 November 2017
BCMR 2016	15 May 2015	10 weeks	28 April 2016
FAMR 2014	2 July 2013	12 weeks	26 June 2014
NBMR 2013	5 February 2013	8 weeks	26 September 2013
BCMR 2013	18 June 2012	9.5 weeks	38 March 2013
WLA 2010	23 March 2010	10 weeks	7 October 2010
BCMR 2008	17 January 2008	10 weeks	8 December 2008

Source: Ofcom website

122. The above concerns regarding the inadequate consultation period reflect wider problems affecting the DFA Consultation. It is Ofcom's proposed implementation date of 1 April 2018 which appears to be driving the curtailed consultation period. In light of the CAT's carefully reasoned and detailed judgment, it is now incumbent on Ofcom to undertake a fresh full market definition and SMP analysis addressing the errors made in the BCMR. Only on that basis should the consideration of whether it is appropriate and proportionate to proceed with the introduction of far-reaching fresh remedies such a DFA. Instead, Ofcom appears to be determined to rush through new and untested remedies, in the process abridging essential protections such as a fair and adequate consultation process.

123. We have sought in this consultation response to provide as much detail and evidence as possible in order to assist Ofcom but, given the very short timescales for responding to a consultation of this nature, we simply have not been able to gather all that we would have done given adequate time to respond. We will continue to gather and prepare additional evidence following submission of the Consultation response and will provide it to Ofcom as soon as is practicable.

IV. Conclusion

124. In light of the significant concerns outlined above and in the rest of this response to the DFA Consultation, we urge Ofcom to reconsider its proposal to introduce a new DFA remedy at this stage. Ofcom simply does not have the evidence base to justify either its current market definitions or the imposition of a novel and untested remedy. Further the process followed by Ofcom in issuing its consultation proposals is flawed and unfair such that it ought to re-evaluate whether, in light of these serious errors, its proposals are appropriate at this stage.

4 Market Definition and SMP Assessment

A. CONCERNS REGARDING THE IMPOSITION OF A NEW DFA REMEDY UNDERPINNED BY THE CURRENT MARKET DEFINITION AND SMP ANALYSIS

125. We consider that the temporary market definition analysis undertaken by Ofcom is materially inadequate in that it does not fulfil the requirements of a market definition analysis which the CAT has found Ofcom was required to undertake.

126. In the 2017 BCMR Statement, Ofcom notes that "*in considering what steps it is appropriate to take, we have taken into account the Tribunal's reasoned judgment, reaching conclusions where we have* been *able to conduct the analysis necessary to address the Tribunal's findings, or where it is clear that our conclusions would not be affected by the Tribunal's findings. We have used those parts of Ofcom's reasoning and analysis from the BCMR 2016 which the Tribunal's judgment did not overturn, taking into account new evidence that has arisen since the completion of the BCMR 2016*."[48]

127. However, it is clear that the analysis undertaken is provisional and falls far short of a proper, full market definition analysis. Ofcom seeks to address this by asserting that its analysis is conservative such that it is confident that BT continues to have SMP in the products and geographies identified, irrespective of what changes it may make following a full reconsideration. Given the breadth of the CAT's findings, Openreach and BT are surprised by such an assertion. Our full comments in relation to the inadequacy of Ofcom's market definition exercise and SMP assessment are set out in the rest of this section below.

128. Whilst we have endeavoured to provide as much information as we can to assist Ofcom's assessment, in the time available this will simply not be sufficient for Ofcom to reflect the CAT's observations. Ofcom will need to gather a range of information on the current state of competition in the market to enable it to come to robust conclusions. Indeed to obtain much of this data, Ofcom will have to use its section 135 powers to gather the data and information that will then support the further work that Ofcom must complete.

I. Legal framework

129. The relevant provisions governing Ofcom's powers to impose SMP conditions are contained in the Common Regulatory Framework under EU law and specifically Directives 2002/21/EC[49] ("Framework Directive") and 2002/19/EC[50] ("Access Directive"). In summary, SMP remedies can only be imposed following a market analysis carried out in accordance with Article 16 of the Framework Directive: see Article 8(2) Access Directive. Article 16 of the Framework Directive requires (i) the NRA first to undertake a market definition exercise in accordance with Article 15(3) of the Access Directive and taking utmost account of the Commission Recommendation and Guidelines referred to therein.[51]

130. The domestic legal framework reflects the Common Regulatory Framework and is contained for the most part in the CA 2003.[52] In particular it stipulates, under s 6(1) CA 2003, "*Ofcom must keep the carrying out of their functions under review with a view to securing that regulation by*

[48] 2017 BCMR Statement, para 1.8; DFA Consultation, para 2.6.

[49] Directive on a common regulatory framework for electronic communications networks and services ("Framework Directive").

[50] Directive on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive).

[51] See further [2017] CAT 25, paras 45-58.

[52] See further [2017] CAT 25, paras 59-68.

Ofcom does not involve (a) the imposition of burdens which are unnecessary; or (b) the maintenance of burdens which have become unnecessary."

131. Further, sections 80 and 80A CA 2003 impose a consultation requirement in respect of market definitions and SMP analyses (unless there are exceptional circumstances and there is an urgent need to act in order to safeguard competition and protect the interests of consumers). They require that Ofcom must publish a reasoned notification before identifying a market for the purposes of making a market power determination, or making a market power determination, and (in the case of a services market) the proposed identification or determination is in OFCOM's opinion likely to result in the setting, modification or revocation of SMP services conditions that will have a significant impact on the market. The notification must set out its proposal(s) and allow a period of "*not less than one month*" (s 80A(6)),[53] "*within which representations may be made to OFCOM about their proposal*" (s 80A(5)(d)). Under s 84(7) CA 2003 the same requirements apply in respect of the review of earlier market identifications and determinations.

II. Market definition and SMP analysis do not comply with legal requirements

132. The temporary market definition analysis undertaken by Ofcom is materially inadequate. It is clear that it does not fulfil the requirements of a market definition analysis which the CAT has found Ofcom was required to undertake.

133. The time Ofcom had to consider the CAT's reasoned judgment (which runs to 200 pages) has been minimal. Whilst the CAT published its ruling on 26th July 2017, this amounted to no more than one short paragraph stating that Ofcom had erred on all three grounds of appeal specific to market boundaries. It was not until the CAT published its detailed judgement on 10th November 2017 that anyone, including Ofcom, could understand the detailed basis of the CAT's decision. Ofcom then published the 2017 BCMR Statement with its temporary market analysis on 23rd November 2017, less than two weeks later. This indicates that the bulk of these documents must have been prepared without the benefit of the CAT's thorough analysis of Ofcom's earlier errors.[54]

134. This contrasts with the analysis Ofcom conducted and which led up to the 2016 BCMR. Ofcom issued its initial call for inputs in April 2014 and issued the final statement over two years later, on 28th April 2016. Mr Senensieb in his witness statement to the CAT noted that the BCMR is one of the largest projects Ofcom carries out, consuming about 28 person-years of effort, excluding the work on designing the associated control of Openreach's charges for leased lines. He also explained that that the scope of the BCMR was large because of the size and diversity of the market, the range and complexity of the issues considered and the large number of interested stakeholders.

135. However, as a result of Ofcom's rushed consideration of the CAT's judgment, multiple errors identified by the CAT in relation to the market definition in the BCMR remain part of the temporary market definition. Ofcom has not addressed those comments from the CAT which relate to the methodological errors in the 2016 BCMR Final Statement (presumably because these are the ones which will require new evidence and thus will be the most time consuming to rectify). By way of example:

    a. At para 157 of its judgment, the CAT found that "*a proper definition of the relevant product market or markets*" required Ofcom to have "*full reference to the SSNIP framework*". However, contrary to this finding the temporary product market definition in the 2017 BCMR Statement fails to have the requisite reference to the SSNIP framework.

[53] S 80A(7) permits Ofcom to specify a shorter period in "*exceptional circumstances*".

[54] Ofcom appeared to confirm this at the CAT hearing on 20 November 2017, when it indicated it had worked on the DFA Consultation document and the underpinning temporary market definition and SMP findings for much of the period since the CAT indicated its decision in July 2017 (see in particular page 25 of the transcript, available on the CAT website.)

b. At para 336 of its judgment the CAT held that "*Ofcom could not safely reach the view that there is a single market spanning the CISBO spectrum without considering carefully whether indirect constraints do exist across the chain or whether sub-groups within the overall chain themselves form relevant markets, disrupting such transmission.*" The temporary market definition in the 2017 BCMR Statement is not based on any such consideration.

c. At para 400 of its judgment the CAT noted that "*Ofcom accepted that if we set aside its product market definition, it would also have to revisit its decision on geographic markets. In particular, we would envisage that if, as a result of its reconsideration, Ofcom were to define the product market(s) differently, it would likely have to adjust the main criteria that drive the design of its infrastructure presence.*" Despite this, Ofcom's temporary market definition fails to make the stipulated adjustments or offer any explanation for not doing so.

d. Having noted the "*rather confused factual background*" at para 418 of its judgment, at para 419 the CAT held that "*if it were to transpire that the Boundary Test had simply been fixed to define the CLA boundary by reference to the historic CELA boundary, rather than as a result of some appropriate review of the requirements for effective competition in 2016, it would obviously not have been correct for Ofcom simply to conclude that no other area in the UK could be effectively competitive unless it was as competitive as the CLA.*" The 2017 BCMR Statement, however, makes no attempt to clarify the factual background or to buttress its definition of the CLA boundary.

136. The very fact that these errors are fundamental means that Ofcom simply cannot yet claim that its market definition and SMP assessment is conservative. By reaching a temporary view on market definition and SMP in this way, there is a real risk of the dark fibre remedy being inappropriate and/or over-reaching.

137. In addition, Ofcom has not considered the significant body of evidence submitted in witness statements as part of the appeal which the CAT did not need to consider in order to find Ofcom to be in error and remit its decision. However, this evidence is essential to a fresh analysis, in particular the need to properly consider customer segments in identifying the relevant focal products for its product and geographic market definition; as well as in considering market power, in particular in markets best characterised as bidding markets where buyers with significant countervailing buyer power tender for long-term contracts often lasting five years or more.[55]

138. Ofcom acknowledges in the 2017 BCMR Statement that the temporary market definition requires further work on at least a number of important aspects. For instance, it states in respect of the geographic market definition that "*further analysis will be required*" to reflect the CAT's observations.[56] This extends to significant issues, such as whether the five central business districts outside London (that Ofcom now no longer considers part of the RoUK geographic market) should be considered as a single geographic market or as separate ones.[57] Ofcom seeks to overcome this deficiency by suggesting that its temporary market definition and SMP analysis

[55] See OFT Guidelines on Assessment of Market Power (Guidelines since adopted by the CMA): "Bidding markets - Sometimes buyers choose their suppliers through procurement auctions or tenders. In these circumstances, even if there are only a few suppliers, competition might be intense. This is more likely to be the case where tenders are large and infrequent (so that suppliers are more likely to bid), where suppliers are not subject to capacity constraints (so that all suppliers are likely to place competitive bids), and where suppliers are not differentiated (so that for any particular bid, all suppliers are equally placed to win the contract). In these types of markets, an undertaking might have a high market share at a single point in time. However, if competition at the bidding stage is effective, this currently high market share would not necessarily reflect market power."

[56] 2017 BCMR Statement, para 2.18.

[57] 2017 BCMR Statement, para 2.18(a).

is conservative. However, it simply does not have the evidence base to make such assertions (see further paragraphs 148 to 170).

139. Further, the temporary market definition and SMP analysis do not accord with the requirements of Article 16 Framework Directive or sections 78(2) and (3) of the CA 2003 in that they fail to comply with the Commission Guidelines. For instance, para 78 of the Guidelines stipulates that "*NRAs [National Regulatory Authorities] should undertake a thorough and overall* analysis *of the economic analysis of the economic characteristics of a relevant market before coming to a conclusion as to the existence of significant market power*." However, no such analysis underpins the relevant analysis in the 2017 BCMR Statement or the DFA Consultation and indeed the analysis which has been carried out contains material flaws.

140. Last but not least, in order to conduct a full and lawful market definition and SMP analysis, Ofcom must gather fresh evidence concerning the state of the market as it exists today, in order to inform its assessment. Neither the 2017 BCMR Statement nor the DFA Consultation detail what is the "new evidence that has arisen since the completion of the 2016 BCMR." Further to Ofcom's letter to BT dated 12 December 2017, Openreach and BT understand this new evidence is certain publically available information regarding the network developments of Virgin Media and CityFibre. Given this is a market which is characterised by private contracts, reliance only on new publically available information is surprising. Ofcom has not updated its evidence or analysis on detailed circuit records or competitive conditions: nearly all evidence dates back to 2014, giving no reliable picture of how the market operates today. Therefore, the possible outcomes of any analysis based on updated data (when completed) are highly uncertain. This is plainly inadequate.

141. It follows that the temporary market definition and SMP analysis fall far short of the full and robust market analysis that Ofcom is required to undertake as a basis for the imposition of SMP remedies. In order to impose SMP conditions lawfully, Ofcom must (i) carry out a proper market definition and SMP analysis, which address the errors identified by the CAT, comply with the Commission's Guidelines and other legal requirements, and take full account of fresh up-to-date evidence, (ii) formulate an "appropriate" remedy on the basis of that market definition and SMP analysis, and then (iii) (except where it there are exceptional circumstances and there is a an urgent need to act in order to safeguard competition and protect the interests of consumers) properly consult on its market definition and SMP analysis and the proposed remedy.

III. Erroneous proposal to impose new DFA remedies given that foundation is flawed

142. In light of the significant shortcomings in Ofcom's market definition and SMP analysis, we consider that Ofcom is proceeding erroneously in proposing the new DFA remedy. The market definition and SMP assessment was carried out quickly to act as a basis for the imposition of emergency measures and is materially flawed. Ofcom itself acknowledges it is insufficient to deal with the concerns identified by the CAT. The significant shortcomings outlined above, and the fact that Ofcom does not even purport to have carried out a proper market definition exercise, mean that the temporary market definition cannot properly form the basis of a sensible proposal for non-emergency measures such as the DFA remedy, and cannot be put forward by Ofcom as such.

143. We are concerned that this foundational error cannot be cured through the current consultation process. The DFA Consultation states at para 2.10 that "*as part of this dark fibre consultation we are also consulting under section 84(2) of the [CA 2003] on the market definition and SMP assessment set out in the [2017 BCMR Statement].*" However, given that a proper market definition is a prerequisite for the introduction (and proper design) of a DFA remedy, a consultation on a temporary and inadequate market definition within the DFA Consultation is insufficient to found such a proposal (see section 3.B.II above). It is only on the basis of a proper market definition that Ofcom could formulate an appropriate proposal for, sensibly consult on, and then introduce such a new (non-emergency) remedy, which is capable of complying with the legal requirements, including Article 5(2) and 8(4) Access Directive and s 47(2) CA 2003.

144. We do not consider that this DFA Consultation response (and those of others) will be able to cure the erroneous starting point for the DFA Consultation. Given Ofcom's unique position as the regulator, only Ofcom is able to gather and consider the necessary evidence from all market participants before preparing a proposal based on that, through the use of its formal information gathering powers under section 135 of the Competition Act 2003. While Openreach, BT and others can and need to comment on such a proposal, such input cannot pre-empt or replace the initial steps Ofcom needs to undertake in order to come to a proper market definition as the basis for a consultation proposal.

145. Further, BT's letter of 28 November 2017 expressly asked for confirmation "that Ofcom is carrying out a full market definition and SMP consultation, which is not limited to Ofcom's partial consideration of the product and geographic markets for CISBO services set out in its Temporary Conditions Statement." Ofcom's response of 30 November 2017 failed to give such confirmation; nor did it confirm (in response to BT's other questions) that any market definition it arrives at following the consultation exercise will be reached in accordance with the Commission Guidelines, comply with the terms of the CAT judgment, and be based on fully up-to-date evidence.

146. This, together with the very tight timetable set by Ofcom, indicates that it will not have undertaken a proper market definition exercise before introducing a DFA remedy, which it has announced it intends to introduce with effect from 1 April 2018. Without such an exercise, however, there is no prospect of a DFA remedy being lawfully introduced.

147. In summary, the reason Ofcom's dark fibre remedy in the 2016 BCMR was quashed and set aside was because it had been based on an unsound market definition. In response to that decision, Ofcom is seeking to re-impose a new dark fibre remedy, on the basis of an unsound and inadequate market definition and SMP analysis. We have serious concerns about the legality of such an approach and we urge Ofcom to reconsider its position as a matter of urgency.

B. OFCOM'S APPROACH TO THE TEMPORARY SMP ASSESSMENT HAS NOT BEEN DEMONSTRATED TO BE CONSERVATIVE AND DOES NOT IDENTIFY WITH CERTAINTY THE MARKETS IN WHICH BT HAS SMP

148. Ofcom claims to have adopted a *"conservative"*[58] approach; it states *"we find SMP only where we can do so based on the evidence we already hold, and without substantial further analysis"*[59]; and furthermore notes that *"in this section we seek to identify those* ***markets in which we can be sure*** *that BT has SMP for the period to March 2019"*[60] [emphasis added].

149. Ofcom then uses a number of "quick fixes" in order to identify with certainty those markets in which it claims BT has SMP. Ofcom does this by:

    a. retreating to positions which Ofcom believes to be uncontroversial (for example a Lower Bandwidth CISBO market linked by a chain of substitution; and considering the five CBDs from separately from the RoUK); or

    b. making superficial changes to its analysis to deal with fundamental problems identified by the Tribunal (e.g. checking the chain of substitution across lower bandwidths by references to shares of supply readily available rather than doing the requisite SSNIP analysis first).[61]

150. These short-cuts to performing the full analysis required by the remittal are patently unsound, and do not allow Ofcom to safely conclude that it has identified with certainty the markets in which BT has SMP. The following sets out the following key areas where Ofcom's lack of a fresh analysis results in

[58] 2017 BCMR Statement, paras 2.5, 2.8, 2.24, 2.25, 2.29, 2.91, 2.93, 2.98, 2.107.

[59] 2017 BCMR Statement, para 2.26.

[60] 2017 BCMR Statement, para 2.20.

[61] See CAT judgement para 169.

an SMP assessment that cannot be considered a safe harbour:

a. While required to conduct a forward looking assessment, most of Ofcom's evidence is out of date, much of it dating back to 2014.

b. Ofcom did not conduct a SSNIP considering each focal product individually, nor properly investigate constraints across any claimed chain of substitution as instructed by the Tribunal;

c. Ofcom considered the Tribunal's findings in relation to geographic markets only superficially if at all;

d. Ofcom's analysis of the core is unsafe because it relies on outdated data and a persisting misunderstanding of the underlying facts;

I. Most of Ofcom's evidence dates back to 2014 or 2015 and is not forward looking as required by legislation

151. Because Ofcom is relying primarily on 2016 BCMR with adjustments to deal with the findings reached by the Tribunal, the bulk of data Ofcom used to inform its market definition exercise (data on market shares, its analysis of geographic markets and infrastructure presence tests) dates back to 2014 or 2015. Nearly all the limited data it has updated is based on publicly available information rather than having been collected using Ofcom's formal information gathering powers. This does not allow Ofcom to draw firm conclusions on a fast moving market such as the communications market safely. Further, it certainly does not allow Ofcom to consider that its current market definitions are conservative.

152. As part of its assessment of market power Ofcom has to conduct a forward looking assessment of market power, and, as part of the European Commission's three criteria test,[62] it has to assess whether a market is prospectively competitive within a relevant time horizon. The relevant time horizon is typically taken to be the period of the next market review, i.e. three years, but it may also be longer if clear evidence of "positive dynamics" [sic] in the market is available within the period of review".[63] Ofcom adopts a very short-term perspective on prospective competition by interpreting the time frame in the Commission Recommendation strictly legally, i.e. until the end of the next market review period, and uses data that has been out of date for three years.

153. While Ofcom refers to CityFibre's and Virgin Media's expansion since the 2016 Statement,[64] it only does so in the context of the SMP assessment, not in its geographic boundary analysis as noted earlier. In the 2017 BCMR Statement Ofcom make no mention of the fact that the data on which its geographic boundary analysis is based dates from 2014, and any infrastructure build between 2014 and 2016 by CityFibre, Virgin Media and possibly others appears to have been omitted from Ofcom's analysis of geographic markets.

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[62] A test a market where SMP has been found has to pass over and above SMP to justify regulatory intervention. This test was created in order distinguish markets where single dominance (the competition law equivalent to SMP) leads to ex ante regulation, to other markets where, before regulatory intervention is justified a market abuse must already have taken place. The latter markets are only subject to general competition law. The three criteria are (i) the presence of high and non-transitory barriers to entry, (ii) the market structure does not tend toward effective competition within a relevant time horizon, and (iii) the application of competition law alone would not adequately address the market failure(s) concerned. The Notice also states: "The application of these three cumulative criteria should limit the number of markets within the electronic communications sector where ex ante regulatory obligations are imposed and thereby contribute to one of the aims of the regulatory framework, namely to reduce ex ante sector-specific rules progressively as competition in the markets develops. Failure to meet any one of the three criteria would indicate that a market should not be identified as susceptible to ex ante regulation." Commission Recommendation of 9 October 2014 on relevant product and service markets, p 2014/710/EU, paragraph (15) of the preamble paragraphs 11 and 17 of the preamble.

[63] Commission Recommendation of 9 October 2014 on relevant product and service markets, p 2014/710/EU, para 15 of the preamble.

[64] 2017 BCMR Statement, para 2.23(b).

154. Consistent with the above, Ofcom also wrongly dismisses CityFibre's geographically distinct investment by comparing it to Openreach's national CISBO volumes. Ofcom has thus failed to take into account known infrastructure build which they themselves describe as "*spread widely across 42 cities*" and the consequential impact this has on competitive conditions *by geography*. Ofcom is similarly dismissive of Virgin Media's network expansion, on the basis that Virgin Media is targeting mainly residential, not business markets and vaguely noting that it appeared that "the majority" of this investment was in RoUK. As noted further below Virgin Media is an important provider of MNO backhaul, only this part of Virgin Media's business is not as visible when relying on public press announcements a data source for market analysis as such press announcements tend to focus on consumer markets.

II. The need to examine each product individually and to properly investigate constraints across any claimed chain of substitution as instructed by the Tribunal

155. In the following we discuss three areas the Tribunal commented on in relation to geographic markets:

a. The need to define geographic markets afresh depending on the product market found, for example:

i. if market definitions were adjusted as a result of a proper SSNIP analysis of bandwidths of up to and including 1G, taking account of customer segments;

ii. by explicitly accounting for EFM infrastructure presence as instructed by the Tribunal; and

iii. in case markets were found to include NGA and other FTTx technologies.

b. Errors in Ofcom's analysis of geographic markets resulting in unsafe findings, for example in relation to the City of Manchester, an analysis Ofcom also applied to the Rest of the UK without adjustments.

c. The use of outdated data in both of Ofcom's tests for geographic markets.

156. In the latter case we contend that the Tribunal's findings relating to Manchester are likely to be relevant across a significant number of locations across the UK should Ofcom correct the methodological errors that led to its conclusions on Manchester in the first place.

The need to consider geographic markets afresh

157. The Tribunal confirmed *"that if … [Ofcom] set aside its product market definition, it would also have to revisit its decision on geographical markets. In particular, we would envisage that if, as a result of its reconsideration, Ofcom were to define the product market(s) differently, it would likely have to adjust the main criteria that drive the design of its infrastructure presence tests.*"[65] Furthermore the Tribunal found that, *"…the correct approach would have been for Ofcom to form its view as to the appropriate geographical areas first and independently of the issues of SMP and remedies, and then to conduct its SMP and remedies assessment in respect of those separate areas".*[66]

158. For example, if Ofcom had properly applied the SSNIP test and found that there was material substitutability between low and medium bandwidth leased lines on the one hand; and FTTx technologies and cable on the other, its infrastructure presence test would then have needed to take into account the presence of LLU, FTTC and cable operators in its analysis of geographic market and SMP analysis.

159. As regards fixed backhaul, and MNO backhaul respectively, Ofcom uses an entirely inappropriate test of geographic market and competitive constraints. This is because it measures the degree to

[65] 2017 BCMR Statement, para 400.

[66] CAT Judgement, para 394.

which customers have choice by reference to the distance a CP may have to dig to serve a business site in a given postcode sector, as opposed to a CP node (in the case of fixed backhaul) or a mobile mast (in the case of MNO backhaul). Each of the two market segments should have a separate test applied. Doing this would most likely allow Ofcom to find a greater proportion of the UK to be effectively competitive.

160. For MNO backhaul, in addition to defining market boundaries by reference to mobile masts (the locations of which are known to Ofcom), it should also use longer dig distances as competitive mobile backhaul markets usually involve very long term contracts of higher value relative to contracts in the business access segment: these contracts need to serve sites that are leased for 10-15 years. Furthermore, these MNO backhaul solutions are sold in markets more akin to bidding markets, where market shares may carry relatively less information about the degree of competition in the market, with infrastructure presence and countervailing buyer power being relatively more important.

161. As regards fixed backhaul, Ofcom's geographic market assessment may result in Ofcom potentially over-regulating up to ✂ circuits because Ofcom treats a CP node as a business site in its geographic analysis.

162. In a nutshell, had Ofcom taken full account of the Tribunal's views, Ofcom may have found different geographic markets for these different product markets, and quite possibly come to a more conservative conclusion on SMP.

Errors in Ofcom's analysis of geographic markets resulting in unsafe findings on Manchester are likely to apply across the UK

163. While the Tribunal did not conclude that Ofcom's methodology of geographic market definition was obviously wrong, it pointed out that the way its methodology was set out left open many questions. It then pointed out examples where Ofcom's methodology resulted in unsound findings for example where Ofcom regulated 11 postcode sectors in central Manchester despite them meeting the stringent Boundary test only the CLA meets.[67] In the 2017 BCMR Statement Manchester as a whole remains regulated.

164. Manchester is not an isolated case. Ofcom has applied the same methodology across the entire country. Ofcom has not considered all postcode sectors afresh to identify candidate areas for further investigation of competitive conditions. As in Manchester, therefore, there are likely to be clusters of postcode sectors elsewhere in the UK which are likely to be competitive, but which Ofcom proposes to regulate.[68] Upon initial inspection, Ofcom appears to have omitted a whole host of areas with rival network presence from closer analysis possibly as a result of spurious averages. As illustrated below, addressing this point could result in a material number of further clusters of postcode sectors being considered as potentially competitive resulting in a more conservative assessment.

165. With regard to Ofcom's treatment of EFM, it notes in the 2017 BCMR Statement that it was unable to fully take into account the impact of EFM on its infrastructure presence test and hence its assessment of SMP despite the CAT requiring it to do so.[69] Judging from publicly available data, it appears to us that including EFM in the infrastructure presence analysis would likely allow for a significant number of postcode sectors to be deregulated or at least to be more lightly regulated. We illustrate this below

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[67] CAT judgement, para 432.

[68] Beal1 180-191 and Beal2 121-133, 173-175 and Annex 4.

[69] Ofcom takes EFM into account in its SMP assessment only for the purpose of service shares, which, however are conducted on the basis of what are likely to be incorrect units of geography (given the issue with the statistical analysis that underlies Tribunal's criticism of Ofcom's finding of SMP in the whole of Manchester as we set out below). The Tribunal specifically noted *"Ofcom do report the number of EFM operators present in each geographic market (as Ofcom have identified them), but simply reporting "presence" however loosely defined is insufficient as we are able to illustrate below (Ofcom Temporary Statement paragraph 2.34). Having included Ethernet in the First Mile ("EFM") within the relevant CISBO product market, Ofcom wrongly failed to take account of providers of EFM when defining or applying its Network Reach and Boundary Tests*" (Tribunal judgement paragraph 472 (4)).

using the example of areas surrounding the CLA. It is likely that this result would be replicated in other areas across the UK were Ofcom to correct its method of analysis: the same principles would apply wherever there is a relatively high concentration of businesses.

The use of outdated data in both of Ofcom's tests for geographic markets

166. Last but not least, Ofcom's analysis cannot be considered a safe harbour because Ofcom continues to use data on infrastructure presence from 2014 and 2015 and significant build has happened since that time. Ofcom superficially dismissed new network build by CityFibre and Virgin Media without formal investigation, and doing so by reference to national, not geographic volume shares.[70] We consider, therefore, that Ofcom's analysis of geographic market boundaries cannot be considered as conservative given that it is out of date and ignores (without justification) new network build which could make a material difference to a market definition and market power finding at local level.

III. Ofcom's analysis of the core is unsafe due to a persisting misunderstanding of the underlying facts

167. Ofcom's assessment of market power in the core is likely to result in regulation of up to 300 sites that should not be regulated because Ofcom misunderstood the nature of the Cablelink product. While the CAT noted that Ofcom's view that indirect presence would impose a weaker constraining effect compared to a direct presence was "*well reasoned and clearly within the scope of Ofcom's reasonable judgement*",[71] we consider that Ofcom's view may have been well reasoned but its reasoning was not consistent with the underlying facts. This misunderstanding appears to have led Ofcom to assume that where the product is bought by a third party rather than a Principal Core Operator ("PCO")[72] itself, the competitive constraint on Openreach is weaker than where it is bought by the PCO. We illustrate below that this has nothing to do with an "indirect constraint" in the meaning of an indirect constraint from a downstream product on a wholesale market; it is therefore irrelevant to determine the strength or weakness of the competitive constraint a PCO (who has already built its network to connect to a footway box outside a BT exchange) may place on Openreach.

168. In summary, even with "cautious" adjustments, Ofcom's partial and incomplete market definition, based on inadequate information and errors in the statistical analysis of geographic markets, is not an appropriate basis for imposing dark fibre as a temporary remedy.

169. We consider that Ofcom cannot introduce an intrusive, disproportionate and market disrupting dark fibre remedy for Lower Bandwidth CISBO services, without conducting a full consultation and a complete and thorough analysis of the product and geographic markets. This is required in order for Ofcom to be in a position to properly identify any competition concerns, and then properly identify the appropriate package of remedies required to remedy any such concerns.

170. Ofcom's market analysis is also not an adequate basis to impose temporary measures which, in order to secure consumer interests during a regulatory lacuna period, Ofcom could have very easily achieved by discussing voluntary transitional arrangements with Openreach to address immediate concerns about a regulatory lacuna.

C. TO ASSESS WHETHER OR NOT A DARK FIBRE REMEDY IS PROPORTIONATE ONLY A FULL ANALYSIS WILL DO

171. Ofcom's new market analysis cannot simply be a patch up of 2016 BCMR; Ofcom must start afresh, taking into account the Tribunal's guidance including on questions of methodology. This might lead to very different conclusions. Ofcom itself agrees that it is not yet in a position to reach an informed view on market boundaries (in relation to which the Tribunal required a significant re-assessment) nor

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[70] 2017 BCMR Statement, para 2.23 (b).

[71] CAT judgement, para 443.

[72] Ofcom defined Vodafone, Virgin Media, Colt, Gamma, Interoute, KCOM, Level3, Neos and Zayo as PCOs in the 2016 BCMR: see footnote 574 in the 2016 BCMR Statement.

market power (which follows market definition).

172. In contradiction to what Ofcom claims in other parts of the document, namely that its market assessment is conservative and uncontested, Ofcom itself notes elsewhere that *"[f]urther analysis will be required to consider, as part of the remitted matters, whether it would be appropriate to define a single product market for all CISBO services or multiple markets covering fewer services. In carrying out this analysis we will take into account the aspects of the Tribunal's judgement relevant to this question.*[73] *This full assessment will take time, given the need to gather further evidence and conduct further analysis to determine the best approach to assessing these products."*[74]

173. Ofcom appears to have changed its approach in the 2016 BCMR from previous reviews in that it placed much less emphasis than previously on the heterogeneity of competitive conditions in assessing the relevant product and geographic market, as well as SMP. Prior to the 2016 BCMR Ofcom did place great weight on such issues. Ofcom used to consider that bandwidth represented a reasonable proxy for the overall conditions of demand and in particular site value impacting supplier incentives to supply a new site. Ofcom also recognised that considering the homogeneity of competitive conditions – while usually considered in the context of geographic market definition, SMP assessment or remedies as a reason for aggregating different areas not linked by demand or supply side substitution - might also be used in the product market context. This resulted in Ofcom finding multiple bandwidth breaks up until the 2016 BCMR, which we consider Ofcom would most likely find also today if it followed an approach consistent with that of the past, as the fundamental dynamics of BCMR markets have not changed. BT and others supported this approach in very large measure: we considered it to be sensible not only in reflecting standard economic theory of how to apply the HMT but also allowed empirical evidence of variation in competitive conditions to play an important role. In this vein, we asked Ofcom in 2015 to provide different cuts of its data which would have given a better indication of heterogeneity in competitive conditions across all bandwidths including those at and below 1G. We consider that it is important Ofcom gives consideration to these issues.[75]

174. The remainder of this chapter explains in further detail the main areas where Ofcom's errors and omissions lead to intrusive and disproportionate regulation of dark fibre where possibly there should be no regulation at all. We demonstrate that its market definition and market power determination does not constitute a 'safe harbour' as claimed and there is a credible risk of the dark fibre remedy being inappropriately applied.

175. The rest of this section is structured as follows:

a. Product markets;

b. Geographic markets;

c. SMP assessment; and

d. The need to consider heterogeneous competitive conditions so as to set objectively justifiable remedies.

I. Product market issues that may, on further investigation, deliver a more conservative outcome

176. If Ofcom were to examine each product individually and conduct a SSNIP as required by the CAT, it may well reach a more conservative market definition and SMP assessment. The two examples we use to illustrate this are:

I. the bearing customer segments are likely to have on the nature of supply side substitution and the nature of competition more broadly; and

[73] Including the discussion of chains of substitution at paragraphs 320-348 of the CAT judgement.

[74] 2017 BCMR Statement, para 2.13.

[75] We are planning to submit a further submission on this entitled "Competitive Conditions and the Delimitation of Product and Geographic Markets".

II. the potential for a bandwidth break between services at 1G and services around 100M and below; potentially resulting in substitution between lower bandwidth CISBO on the one hand and FTTx and cable technologies on the other.

Ofcom's analysis fails to analyse each product individually, and should do so by considering the main customer segments

177. To achieve a fresh appraisal of the relevant markets, Ofcom needs to consider the arguments Openreach set out in both its response to market analysis in the 2015 BCMR Consultation and in evidence to the CAT (particularly in Reid1 and Reid3). Ofcom's current analysis is largely based on Openreach's product set which is largely a result of regulation and does not consider that absent regulation the relevant products would be sold in a different way both technically and commercially. However, this is precisely what Ofcom is required to do under the Modified Greenfield approach (see text box below), which Ofcom itself purports to apply. Considering how the products under review are bought and sold in markets where providers are vertically integrated (for example Openreach's competitors in the UK or other incumbent providers in EU countries) would lead Ofcom to place greater emphasis in its analysis of relevant markets to the nature of the correct focal product. This would need to be defined by reference to the market segments Ofcom has identified itself because the products these customer segments buy differ materially between them and impact in particular the degree and nature of demand side substitution, supply side substitution by geography (both relevant for market definition), countervailing buyer power, barriers to entry and prospective competition (relevant for the SMP assessment and the latter also for the three criteria test).[76]

The need for a consistent application of the Modified Greenfield approach

A principle of market analysis in regulated wholesale communications markets is that market analysis should be conducted on the basis of a counterfactual of no SMP regulation in the market under consideration. This is in order to avoid a circular analysis: if one analyses markets with the regulation in place one would find that there was no need for regulation. This is also referred to as the 'Modified Greenfield' approach.

Ofcom claims to apply the Modified Greenfield approach, although it does so selectively. For example, it notes: "[t]he market definition exercise is therefore conducted in relation to a hypothetical scenario in which there are no ex ante SMP remedies in the reference market(s), but ex ante SMP remedies in other markets continue to apply. For example, we assume that remedies imposed in the Wholesale Local Access (WLA) market apply and that therefore BT is required to provide LLU, VULA, SLU and PIA.[1]"

However, this only makes references to SMP regulation outside the market under consideration and therefore it is correct to assume these remedies remain in place for the purposes of the BCMR analysis. Ofcom does not comment on the primary point of the Modified Greenfield approach which is to carry out the BCMR analysis on the basis of the hypothetical scenario that the existing BCMR remedies are not in place.

This is much more than a theoretical point and is fundamental for the BCMR market analysis. Contrary to the requirement of the Modified Greenfield approach, Ofcom starts the product market analysis with Openreach's regulated products, notably EAD and OSA/OSEA, and presumes the technical and commercial characteristics of these products are defining of the focal products for analysis. This is a serious error; Ofcom should have asked the question 'What products, in both technical and commercial terms would wholesale players, including Openreach, offer absent regulation, either in terms of external sales, or internal sales, resulting in indirect constraints from retail markets?'

Ofcom could have gained immediate insight into this question by looking first at the products offered by infrastructure owning CPs other than BT, including where they are sold in product bundles (as noted elsewhere the bandwidth mix used by each of the three market segments is

[76] Commission Recommendation of 9 October 2014 on relevant product and service markets, p 2014/710/EU, para 15 of the preamble.

materially different), or even internationally considering for example how multinational mobile operators procure backhaul from incumbent operators elsewhere. Considering markets in this way Ofcom would find that the supply of MNO backhaul and fixed backhaul would not be characterised by single point to point leased line products sold one at a time at a list price. Supply of each of these would be characterised by large scale, long-term bilateral contracts with bespoke technical and commercial terms. At a technical level, these are more likely to be in the form of a bespoke aggregation service, not a collection of point to point leased lines, and may include bespoke operational processes and systems for repair; at a commercial level, the contract may contain a wide variety of mutually agreed conditions. Importantly, it is not realistic to find that the price and technical features of a leased line are as defined by Ofcom. In short, for MNO and fixed backhaul, the product market analysis under a Modified Greenfield approach needs to start with bi-lateral contracting.

178. As correctly identified by Ofcom, the key market segments are business access, MNO backhaul and fixed backhaul. While recognising these exist, Ofcom then did not consider how they are likely to differ and how this could impact its market definition and SMP assessment. These differences include but are not limited to:

    a. bandwidth mix they tend to buy;

    b. typical contract lengths and contract value;

    c. how they buy bandwidth (off the shelf or tender contracts);

    d. what proportion of a contracts require new build and if so to what degree; and

    e. the evolution of bandwidth demand over time, i.e. not all customer segments have the same bandwidths demands or need to migrate upwards.

179. Differences in these characteristics matter because the above market characteristics impact the nature of demand side substitution. For example, MNO backhaul is mostly bought and sold in long term tender contracts and often demand side substitution may not be limited in the same way it is for business access by the presence or absence of pre-existing infrastructure. This is because for contracts lasting in excess of seven to ten years, it is often worth building a proportion of the required accesses to win the contract, or even leasing them long term from third party suppliers.

180. The above characteristics also impact the degree to which there is supply side substitution by geography. Ofcom could investigate this by conducting an infrastructure presence test by reference to mobile sites and CP exchanges (rather than business sites), as set out in the section on geographic market definition below. For example, Lower Bandwidth CISBO services, especially where mostly used for business access, infrastructure competition, include EFM infrastructure and may potentially also include cable and FTTx.

181. In the timeframe we were given for this consultation we have been unable to provide more than an indication of how market segments may differ (noting that Openreach in particular must offer service according to its existing regulations and these preclude any bi-lateral bargaining as part of a tendering process).

182. The bandwidth mix by customer segment that Openreach sells differs in that business access makes up ✂ circuits up to and including 100M; circuits at 1G are ✂ ; while VHB circuits are ✂ .[77]

183. The typical contract length for the business access segment tends to be lower than for MNO and fixed backhaul. While the former are likely to range mostly between one and five years, the latter can be

[77] In the time available we have not been able to produce accurate estimates as this data is not readily available Openreach systems.

five years or longer.

184. Business access (typically used to connect outlying business sites to a corporate private network or for internet access) tends to be purchased in a more commoditised fashion; whereas MNO and fixed backhaul are characterised by large, and long-term tender contracts where buyers tend to have considerable countervailing buyer power; they also contain bespoke technical and commercial conditions. The majority of mobile backhaul services are purchased through two operators, MBNL and CTIL and there are also some direct purchasers.[78]

185. Openreach's rivals can be observed to sell contracts in a similar fashion albeit unrestricted by wholesale regulation. One example is a contract between MBNL and Virgin Media, concluded in 2011 and running for a total of 8 years, i.e. until the end of 2019, whereby Virgin Media provides mobile backhaul for the entire period for a value in excess of £100m. A more recent example Ofcom itself mentions in the 2017 BCMR Statement, is the recently concluded agreement between Vodafone and CityFibre whereby the latter agrees to provide the inputs Vodafone requires to reach 1m residential and business sites in 12 UK cities, which is likely to be used also for MNO backhaul.[79] There are likely to be many of these agreements which Ofcom could request to see under its formal powers to establish the degree of competition in this market.

186. Furthermore, the different market segments also are likely to entail different proportions of new build as part of a new contract and we can provide data from Openreach systems should Ofcom wish to look at this further. This could be a consequence of differences in typical contract length and contract value for these customers (i.e. CPs may be willing to incur higher upfront costs in connecting a site as part of a longer term/higher value contract compared to lower contract lengths and values).

187. Our ability to investigate divergences in the evolution of bandwidth demand has again been limited by the time we had to respond to this consultation. However, as illustrated in Mark Logan's witness statement, significant differences between business access, fixed backhaul and MNO backhaul are likely to exist. [80]

188. As noted, the above differences between market segments also matter in terms of barriers to entry and expansion, countervailing buyer power and prospective competition. For example, the nature of competition in the MNO segment is more akin to bidding markets with low barriers to entry and high countervailing buyer power: the distances CPs are likely to be willing to dig to provide access to mobile mast sites in the context of a long term contract (see for example the recent deal between CityFibre and Vodafone which may well also provide Vodafone with mobile backhaul capabilities[81]) are likely to be longer than those where one or even ten business sites are connected under a two year contract.

189. The above differences in characteristics by customer segment are likely to have a material bearing on:

    a. the definition of geographic markets and the appropriate way of designing infrastructure presence tests (as noted below in the section on geographic markets); and

    b. The correct threshold to select to help determine whether or not a market is effectively competitive or not (as set out in the section on SMP below).

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[78] These are joint ventures to build and run the physical access networks. MBNL operates on behalf of EE and 3 and CTL for O2 and Vodafone. Mark Logan First Witness Statement in BT's appeal of Ofcom's 2016 BCMR, paragraph 73.

[79] Ofcom notes the impact on overall volumes of CISBO to be small Ofcom, thus dismissing its relevance for its assessment of market power and prospective competition in the time frame of the current market review. We return to this below where we consider the analysis of geographic markets.

[80] Mark Logan First Witness Statement in BT's appeal of Ofcom's 2016 BCMR, see para 50 ff for business access; para 61 ff for fixed backhaul and paragraph 72 ff on MNO backhaul.

[81] https://www.cityfibre.com/news/vodafone-cityfibre-bring-gigabit-speed-fibre-uk/

A bandwidth break between around 100M or thereabouts and 1G may well exist

190. Ofcom states at paragraph 2.9(a) of the 2017 Statement that its "*view that Lower Bandwidth CISBO services all lie in the same market was largely uncontroversial*". It appears not to have carried out the necessary analysis the CAT highlighted would be needed to conclude that a chain of substitution exists, namely whether indirect constraints do exist across the chain or whether sub-groups within the overall chain themselves form relevant markets, disrupting such transmission. As noted below, customers for 100M services have a choice of EFM, NGA and FTTP as well as Ethernet services.

191. We did note in our response to Ofcom's 2015 BCMR consultation that *"[s]ignificant differences in competitive conditions can also be observed between the 1Gbit/s service market, and the market for services below 1G (effectively the market for services of around 100Mbit/s). Such differences are not as stark as the break between 1Gbit/s and above 1Gbit/s, but are nevertheless particularly apparent, especially within more dense business areas such as London and the city business districts (CBDs) of other provincial cities across the UK."*[82]

192. Such a bandwidth break may be more likely in some market segments, for example in the business access segment, than in others. It seems quite plausible that a hypothetical monopolist of services up to and including 100M (possibly including FTTx and cable) could make a monopoly profit in particular in the business access segment by raising the price by 5%-10%, in particular as the 100M segment constitutes the vast bulk of circuits in volume terms. Ofcom would need to conduct a SSNIP to consider whether such a price increase may be unprofitable, in particular given the large number of customers that would have to migrate up to 1G for this to be the case. By the same token, Ofcom would need to assess whether users of 1G services would migrate down to taking multiple circuits of 100M or less.

193. Without conducting a proper assessment as required by the CAT, Ofcom cannot simply assume that its finding that there is a chain of substitution linking all Lower Bandwidth CISBO services is safe. As such, in the absence of conducting a full market analysis, Ofcom cannot claim to have identified a "safe harbour".

If Ofcom considered a product market of bandwidths up to and including 100M this market may be found to extend to other technologies including NGA, FTTx and cable

194. As we set out in previous responses, in general, Ofcom has found a very broad bandwidth market but a narrow technology market (i.e. excluding technologies such as FTTx and cable).[83] Had Ofcom considered market segments and the focal products within them as the starting point for their SSNIP, we believe they may have found the opposite: that is narrower bandwidth markets and broader technology markets.

195. In the last market review Ofcom itself considered whether NGA technologies could be considered close substitutes to leased lines. It noted that for some users, NGA could be considered to provide an acceptable alternative to a symmetric service. Ofcom concluded that at least in terms of headline speeds, NGA services can be seen as potential substitutes to leased lines services but that some leased line service features are not fully matched by those of NGA services, also noting the lack of national footprint for NGA at the time.[84]

196. In this context, we note that FTTx services have since become more widely available, with NGA covering 91% percent of UK premises today, up from 83% in 2015 and 75% in 2014.[85] There also has been localised investment in FTTP and significant upgrades in cable bandwidth (VM introducing Docsis 3.1 and possibly upgrades in backhaul technology to improve consistency of performance

[82] BT response to Ofcom's May 2015 BCMR consultation documents, Part A, para 5.3.

[83] Ibid, para 5.15.

[84] Ofcom, 2016 BCMR, Annex 6, paras A6.13 ff.

[85] Ofcom Connected Nations 2017, 15 December 2017; and Ofcom Connected Nations 2015, 1 December 2015.

during peak hours).

197. In addition, there may have been commercial or technological developments which may have made other technologies more substitutable than they might previously have been. Mr Reid explained in his witness statement that EAD provides a 'bit-pipe' (Reid3 para 71-95) and that a bit-pipe has simple and very generic properties. NGA also provides a bit-pipe and at this technical level is the same as EAD and completely interchangeable. The two primary differences between EAD and NGA are a) asymmetric bandwidth and b) service level arrangements, for example 24/7 repair response. In the case of asymmetric bandwidth, there will be many cases when this is either irrelevant to the customer or may actually suit the customer, in which this difference between EAD and NGA is not relevant to those customers. Moreover, asymmetric bandwidth is not a fundamental property of every NGA technology and adding symmetric service as an option to at least some NGA services is a plausible development (the costs associated with this would vary by NGA technology). In the case of service level arrangements, for some customers this is not a requirement and for those for whom it is a key differentiator, it is a plausible development to NGA services to include higher levels of service response an option.

198. Had Ofcom updated its analysis considering such developments this may well have changed Ofcom's assessment resulting in it finding a wider market.

199. In summary, had Ofcom examined each product individually and conducted a SSNIP as required by the CAT, it may well have reached a more conservative market definition and SMP assessment. The two examples we used to illustrate this were explicitly considering customer segments in the context of a proper SSNIP analysis Ofcom did not undertake; and the potential for a bandwidth break between services at 1G and services around 100M and below, potentially resulting in substitution between Lower Bandwidth CISBO services on the one hand and FTTx and cable technologies on the other.

II. Geographic market issues that might, on further investigation, deliver a more conservative outcome

200. In the following we set out three main areas where the Tribunal commented on Ofcom's findings in relation to geographic markets. In all of them we consider that – if Ofcom were to correct its methodology – it may well find not only greater heterogeneity in competitive conditions but also a greater number of areas that are effectively competitive. We make our points in the following order

    a. The need to define geographic markets afresh depending on the product market found, for example:

        i. if market definitions were adjusted as a result of a proper SSNIP analysis of bandwidths of up to and including 1G,[86] taking account of customer segments;

        ii. by explicitly accounting for EFM infrastructure presence as instructed by the Tribunal; and

        iii. in case markets were found to include NGA and other FTTx technologies.

    b. Errors in Ofcom's analysis of geographic markets resulting in unsafe findings, for example in relation to the City of Manchester, an analysis Ofcom also applied to the Rest of the UK without adjustments.

    c. The use of outdated data in both of Ofcom's tests for geographic markets.

201. In the latter case we contend that the Tribunal's findings relating to Manchester are likely to be relevant across a significant number of locations across the UK should Ofcom correct the methodological errors that led to its conclusions on Manchester in the first place.

[86] CAT Judgment paras 373, 400, and 419.

A fresh assessment of the relevant geographic market for each relevant product market may well result in a more conservative assessment of market boundaries

202. Ofcom has used a single methodology for its geographic market definition despite local competitive conditions differing depending on

a. the customer segment in question;

b. EFM being part of the relevant product market yet not explicitly accounted for in Ofcom's tests for geographic markets; and

c. whether or not FTTx technologies and cable were found to be part of the same product market as bandwidths around 100M and below.

203. If Ofcom had investigated a. and b. above Ofcom would have mostly likely found more areas to be effectively competitive than it has in the 2017 BCMR Statement. If Ofcom had found sufficient substitutability between FTTx and cable on the one hand and lower bandwidth leased lines on the other, it would have found an even larger proportion of the country to be competitive.

Customer segment

204. The current network reach methodology focusses on the business access customer segment. Ofcom's Network Reach analysis and the Network Boundary Test measure distances between rival infrastructure and what Ofcom considers to be a reasonable proxy for bandwidth demand from businesses (modelling demand from 157,000 such sites). Firstly, the location of business sites may not be the right proxy for the location of MNO masts or CP nodes.[87] Secondly, the distance a CP is willing to dig is likely to differ by customer segment given differences in value, contract length and similar factors.

205. As regards the first point, the location of business sites may not align well with that of MNO mast sites, nor fixed backhaul locations, resulting in incorrect geographic market boundaries. Not considering this properly is likely to be a material omission in particular as MNO and fixed backhaul volumes Openreach sells in the lower bandwidth segment that is the subject of the 2017 BCMR Statement make up ✂ 1G circuits and ✂ circuits at 100M and below. As noted above, in the time available to us, we have not been able update CISBO volumes by bandwidth by customer segment and clean the data to match Ofcom's categories hence the above is a cautious approximation, but we can produce this data should Ofcom wish to use it.[88]

206. As regards the second point, Ofcom applied a single dig distance across all segments of the lower bandwidth market. However, in reality these are likely to differ markedly depending on the value of the site and the nature of the contract in question. For example, for MNO backhaul, it may be the case that contracts may easily last in excess of 5 years and cover entire UK regions. This is because the lease of the mobile site is very long (perhaps 10-15 years), and requires power to be delivered to it. The willingness of infrastructure operators to dig and the distance they are willing to dig in the context of very high value contracts entailing long term commitments is likely to be much higher than elsewhere. This effect is likely to be further amplified when a single contract involves many sites and a supplier can offset the higher costs of a few sites that are more difficult to serve against a larger number of sites which are much cheaper to serve.

[87] The dataset of 157,000 business sites is already a crude proxy for demand from local businesses and does not differentiate by bandwidth. As noted previously, Ofcom needs to do an analysis based on the actual customer sites and the circuits serving them (it collected this data for the last market review). Such an analysis will yield a more accurate picture of competitive presence by geography. (Letter from Paul Richards of BT to Katie Currie of Ofcom, 9 June 2015 (by email only).)

[88] First Witness Statement by Mark Logan, Figure 1.

207. As we also note below in the section on Ofcom's SMP assessment, Ofcom has applied one competitive threshold for its SMP assessment for fixed backhaul circuits that happen to fall within its definition of the core (because they run between two BT nodes; see further below); and another for fixed backhaul circuits running between a BT node and a CP node. The test for circuits that happen to fall within Ofcom's definition of access circuits (about ✂ circuits according to our preliminary analysis) is entirely inappropriate for this purpose because it assumes low dig distances for what are potentially "high value sites".

208. Ofcom has recognised in the past that in such cases a longer dig distance may be more appropriate. For example, in the 2012 BCMR consultation, whilst maintaining the position that it was appropriate to use the same network reach analysis for all product markets, Ofcom acknowledged that it is likely that the economic build distance for lower bandwidth circuits would be lower, and also considered the implications of build distances as high as 1km in the case of datacentres (where the economic value of the site would be greater).[89] A similar approach was taken in the 2013 BCMR Statement in the case of MISBO circuits, where Ofcom used a 500m buffer as a sensitivity test because they expected that MISBO customers may be relatively higher value thus OCPs may be prepared to dig further to reach them.[90] [91]

209. It would not be challenging to adapt the methodology of identifying geographic markets to the relevant customer segments. The locations of mobile masts are well known and, similarly, the locations of CP nodes were collected by Ofcom in 2014 as part of their formal information requests and could easily be updated.

210. On the basis of the above Ofcom cannot assume it has established that its geographic market definition adopted in the context of the 2017 BCMR Statement stands on safe ground. Ofcom needs to address the deficiencies we have identified above prior to implementing a new and irreversible remedy such as dark fibre.

Including EFM in the Boundary test and the High Network Reach (HNR) analysis

211. The HNR test was used to identify *"other areas where there is somewhat more competition than in the rest of the UK to an extent that merits further analysis, possibly leading to the definition of a separate market and/or variation in remedies"*.[92] Ofcom included EFM in the product market in 2016 and similarly includes it in this new Lower Bandwidth CISBO product market, as well as in its calculation of market shares. However, it notes that has not taken it into account when analysing network reach and will do so "as …we address the remitted matters".[93] As we set out below, including EFM would result in a greater number of clusters of postcode sectors that are, on Ofcom's own terms, competitive.

212. Specifically, Ofcom notes that in the LP there are on average 2.02 EFM operators present.[94] Ofcom also note that within 12 of the 43 exchanges in the LP only one or no operators are present. Ofcom then conclude on this basis that as a result a substantial minority of users within the LP are likely to face a more limited choice and that in relation to these users, Openreach is likely to be in a strong position.

213. While it is Ofcom's duty to protect consumers from market power, in this case it appears that Ofcom

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[89] Footnote 101 BCMR Consultation 18th June 2012, para 5.89.

[90] Footnote 102 BCMR Statement 28th March 2013, para 5.310.

[91] March 2013 BCMR Statement, para 5.310.

[92] The HNR test was satisfied in places where the average business had two or more OCPs' networks within 200m." (Ofcom's closing submissions as quoted in the CAT BCMR Judgement, para 357.)

[93] 2017 BCMR Statement, para 2.18.

[94] This is the simple average number of EFM providers per exchange and not a weighted average. It is likely to underestimate the average number of EFM providers per business site in LP as the exchanges with the greatest number of businesses will have attracted a higher number of EFM providers.

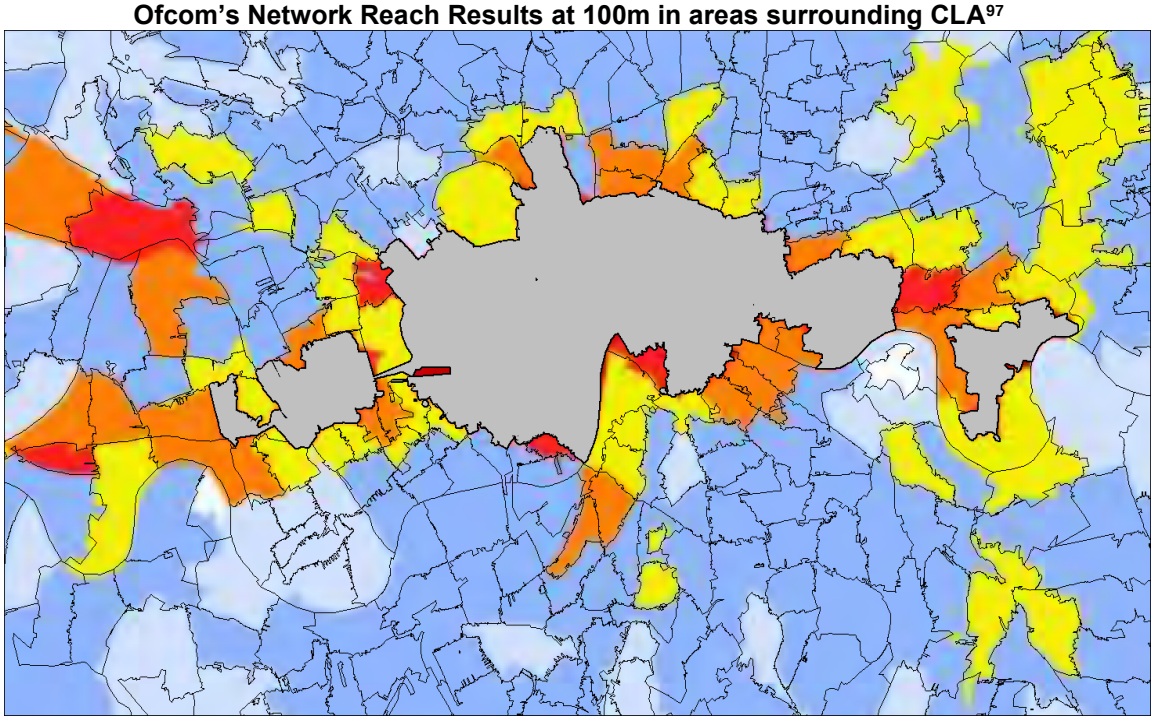
prefers to protect the minority of users by over-regulating in areas where there is competition, instead of better targeting its regulation at areas where there is not. We return to the need for a robust way of conducting geographic analysis below.

214. For now the only thing to note is that according to Ofcom therefore there are 31 of 43 exchanges in the LP with 2 or more EFM providers who could provide comparable services to business customers.[95] As we illustrate in the picture below, and read in conjunction with Table 2.2 in the 2017 BCMR Statement, this is likely to lead to the proportion of businesses with competitive supply in the LP to rise. As a result, rather than conducting its analysis on the basis of the same spurious averages across wider areas (such as the whole of LP) or postcode sectors irrespective of geographic size, Ofcom should consider making adjustments to its methodology (see further below).

215. The figure below shows the Fibre Network reach averages for the postcode sectors in London, with the thin black lines delineating them.[96] These are all adjacent to the Central London Area (CLA) as defined by Ofcom. The CLA is greyed out as this has already reached Ofcom's threshold for the degree of competition needed to indicate a competitive market. Inspecting this map shows that there are multiple postcode sectors where there are, on average, four or more (red); orange (three or more); or two or more (yellow) fibre infrastructure providers present.

Figure 1

Ofcom's Network Reach Results at 100m in areas surrounding CLA[97]



Source: Openreach and BT analysis based on Figure 8b in the Expert Report of Katie Curry dated 17 November 2016

216. Ofcom does not publish the number of EFM operators per exchange, but it would be expected that the greatest number of EFM operators would be active in areas where there are also the greatest number of potential customers. It is therefore very likely that some of the above postcode sectors in

[95] In the 2016 FS Ofcom has published the number of EFM provides in exchanges covering LP [FS table A10.16]. We believe these figures exclude the EFM services provided by BT Wholesale, and which, under the Modified Greenfield approach should be included as an independent constraint based on inputs from another regulated market.

[96] A postcode sector is identified by the first three digits of the postcode.

[97] The figure recreates a figure in Kate Curry's expert report using the same software Ofcom uses (Kate Curry, Expert Report on Market Boundaries, 17 November 2016, Figure 8b; we have overlaid the CLA area and greyed it out)

yellow and orange meet Ofcom's Boundary Test in terms of either or both of the two following conditions being met:

a. Postcode sectors where businesses have on average of five or more OCPs within a buffer distance of 100m; and/or

b. Postcode sectors where businesses have on average four or more OCPs within 100m and, in addition, where 90% of the businesses are within 100m of at least two OCPs.[98]

217. Similarly, it is likely that if Ofcom were to include EFM in the High Network Reach (HNR test) this would result in more areas being identified where competition is somewhat greater than in the rest of the UK *"to an extent that merits further analysis, possibly leading to the definition of a separate market and/or variation in remedies*".[99]

218. The above suggests that Ofcom's approach is not conservative.

If a relevant market of bandwidths of around 100M and below (or some other bandwidth break if a proper SSNIP was conducted) was found, geographic infrastructure presence tests would need to reflect this

219. Including NGA in the relevant market would fundamentally change the degree of competitive constraints by geography, including alternative operators providing access lines to businesses in the area of a BT exchange. This could be, for example where they may provide business products based on Openreach's GEA product. In addition, Ofcom would need to assess whether other CPs (including Virgin) provide business access via their vertically integrated networks.

220. It may not only change the definition of the relevant geographic market but would also affect the calculation of market shares, as it may require including the notional wholesale market shares of those competitors in the relevant geographic area.

Ofcom's methodology results in unsound findings for Manchester – this is unlikely to be an isolated case

221. As advised by the Commission, Ofcom should attempt to identify the areas of the entire UK where competition is greater, or where competitive conditions are sufficiently differentiated to warrant a separate market definition.

222. The Tribunal raised the issue as to why Ofcom was content to deregulate the CLA but did not think the same approach should also apply to other postcode sectors which met the stringent Boundary Test, such as the 11 postcode sectors in central Manchester.[100]

223. This does not seem consistent with Ofcom's presumed conservative approach in the 2017 BCMR Statement, which imposes SMP across the whole of Manchester, despite some areas being the most competitively served in the UK, as is shown by Ofcom's own analysis and reinforced by Mr Farmer's Witness statements quoted in the Tribunal's Judgement: "*one could argue that there are at least BT+8 providers in central Manchester …… In Gamma's view, therefore, the market in central Manchester at least is truly competitive and there is a real possibility of further infrastructure investment there*."[101] This was not challenged by Ofcom in the hearing. A process that results in an SMP designation in the centre of Manchester is clearly flawed, and cannot be relied upon.

224. Addressing the Tribunal's point, and applying it to not just to Manchester but doing the entire UK justice does not necessarily require finding very narrowly defined geographic markets with a different

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[98] Ofcom's BCMR 2015 Consultation, para 4.91.

[99] CAT Judgment, para 357, quoting from Josh Holmes.

[100] CAT Judgment, para 432.

[101] CAT Judgment, para 379.

set of remedies for each. Pragmatism can be applied with open eyes once the underlying data analysis has been done so as to expose the trade-offs such pragmatism entails.

225. Once this analysis has been done it is likely that there will be a material number of (possibly even adjacent) postcode sectors that pass the Boundary Test, similar to the way this has been illustrated for Manchester. In addition, and as we note below in the section on SMP, having corrected its methodology for key sources of bias, Ofcom could then set a test for SMP more in line with SMP thresholds elsewhere, requiring a lower number of competitors than four or five for a market to be competitive.

226. The adjustments to the analysis we consider necessary to define geographic markets appropriately for the business access segment (see our views on MNO and fixed backhaul segments at paragraph 204) are two-fold, and both have to do with the way in which Ofcom treats the results of the HNR test once it has conducted it.

    a. Firstly, Ofcom needs to consider that a bias is introduced by virtue of the large variation in the size of postcode sectors in the UK.

    b. Secondly, once that bias has been addressed, Ofcom needs to investigate all postcode sectors which pass the HNR test (corrected for the bias above) to establish whether or not an area may be competitive or not.

227. Regarding the first issue above, when conducting the HNR analysis of geographic markets on the basis of postcode sectors, Ofcom would need to inspect the data to identify postcodes sectors that are significantly larger than others and adjust for the bias entailed by the uncritical interpretation of averages calculated across them. Using ordinance survey data and taking the example of a NW10 7, this postcode sector has an areas of 2.7km^2, which is significantly larger than those of CLA which have an average area of just 0.12km^2 (i.e. NW10 7 is the size of 23 CLA postcode sectors). It is easy to see that averaging the “network reach” values of all business sites across areas of such different sizes may yield biased results: larger postcodes sectors will be less likely to be found competitive as pockets of truly competitive conditions will be combined with areas of lower competitive conditions. Ofcom should correct for this bias.

228. Regarding the second issue above, only once the postcode sector data has been adjusted in one way or another for this bias, any postcode sectors passing the HNR test should be included in further analysis in the Boundary Test, again using postcode sectors, not entire areas or cities where spurious averages are likely to result. It appears to us that what Ofcom has done instead is to select some larger areas where the HNR was passed using criteria we were unable to reconstruct and then applying the more stringent boundary test only to them.[102]

229. Ofcom thus appears not to have considered the possibility that there may be postcode sectors and possibly clusters of sectors, which, together, might make up material areas worthy to be considered further by applying the Boundary Test to them.

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[102] We note that while the Tribunal were not "inclined to the view that BT had… made out its case that Ofcom had erred in its selection of the main parameters that went into the Boundary Test …, … [it was] left with a real sense of unease given that the account from Ofcom of the design process was incomplete and BT had been unable to cross-examine any person from Ofcom with direct knowledge of the process." The Tribunal further noted that "… the incomplete state of the evidence as regards the process that went into the design of the Boundary Test means that we cannot assess the adequacy of the investigation performed by Ofcom in this case” (para 359). The Tribunal then concluded: "Against this rather confused factual background, and again, conscious that Ofcom may well be reconsidering its geographic markets definition, we prefer not to express a concluded view on this point. Suffice it to say, however, that if it were to transpire that the Boundary Test had simply been fixed to define the CLA boundary by reference to the historic CELA boundary, rather than as a result of some appropriate review of the requirements for effective competition in 2016, it would obviously not have been correct for Ofcom to simply conclude that no other area in the UK could be effectively competitive unless it was as competitive as the CLA." (para 419)

230. Close examination of the UK-wide map of areas where Network Reach, based on fibre presence alone, is greater than two shows areas in many cities, including, but not limited to Southampton; Portsmouth; Brighton; Southend-on-Sea; Croydon; Reading; Basingstoke; Cardiff; Guildford; Leicester; Warrington; Derby; Nottingham; York; Middlesbrough; Edinburgh; Perth; Dundee; Exeter; Milton Keynes; and Peterborough. [103]

231. Illustrating the scale of these areas of high network reach compared to those Ofcom ultimately considered to be competitive upon closer examination, we note that the CLA and the unregulated CBDs account for a total of 370 postcode sectors. Ofcom's own analysis finds that, based on 2014 network data, 1,176 postcode sectors meet their HNR threshold.[104]

232. Ofcom also presented sensitivity analysis of CityFibre network build, and found that large areas could potentially meet their lower network reach threshold. Ofcom dismissed these areas by simply calculating an unweighted average network reach across these wide areas with comparing this with those it calculated for LP. It did not attempt to investigate if there were pockets of competitive supply within these large areas (For example, the Reading area consists of 77 postcode sectors)

Ofcom's analysis cannot be considered a safe harbour because Ofcom continues to use data on infrastructure presence from 2014 and 2015 and significant build has happened since that time

233. As part of its assessment of market power Ofcom has to conduct a forward looking assessment of market power, and, as part of the European Commission's three criteria test[105], it has to assess whether a market is prospectively competitive within a relevant time horizon. The relevant time horizon is typically taken to be the period of the next market review, i.e. three years, but it may also be longer if there clear evidence of positive dynamics [sic] in the market is available within the period of review" (see also section on SMP below).[106]

234. In the 2017 BCMR Statement, Ofcom refers to CityFibre's expansion since the 2016 Statement[107] but only in the context of the SMP assessment, dismissing it by reference to Openreach's national CISBO volumes. Ofcom has failed to take into account known infrastructure build which they themselves describe as "*spread widely across 42 cities*" and the consequential impact this has on their assessment of competitive conditions by geography.

235. Ofcom dismisses the impact of Virgin Media's network expansion noting that *"Virgin Media's focus*

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[103] 2015 Consultation, Annex 15, Figure A15.7; and 2016 FS Figure 3.11.

[104] 2016 BCMR Final Statement, table A10.8. We note that in their 2016 BCMR Final Statement Ofcom also presented results of some sensitivity analysis for 23 areas where CityFibre announced they intend to build fibre infrastructure, although the same methodological issues noted above apply (see Table A10.14).

[105] A test a market where SMP has been found has to pass over and above SMP to justify regulatory intervention. This test was created in order distinguish markets where single dominance (the competition law equivalent to SMP) leads to ex ante regulation, to other markets where, before regulatory intervention is justified a market abuse must already have taken place. The latter markets are only subject to general competition law. The three criteria are (i) the presence of high and non-transitory barriers to entry, (ii) the market structure does not tend toward effective competition within a relevant time horizon, and (iii) the application of competition law alone would not adequately address the market failure(s) concerned. The Notice also states: "The application of these three cumulative criteria should limit the number of markets within the electronic communications sector where ex ante regulatory obligations are imposed and thereby contribute to one of the aims of the regulatory framework, namely to reduce ex ante sector-specific rules progressively as competition in the markets develops. Failure to meet any one of the three criteria would indicate that a market should not be identified as susceptible to ex ante regulation." Commission Recommendation of 9 October 2014 on relevant product and service markets, p 2014/710/EU, paragraph (15) of the preamble paragraphs 11 and 17 of the preamble.

[106] Commission Recommendation of 9 October 2014 on relevant product and service markets, p 2014/710/EU, paragraph (15) of the preamble.

[107] 2017 BCMR Statement, para 2.23(b).

was on residential properties and that the plans Virgin Media had shared with … [them] suggested that the majority was in the RoUK where, other than Virgin Media, OCP presence is generally very limited". Virgin Media and CityFibre are both very active in particular in the MNO backhaul market which is likely to be more akin to a bidding market, thus likely to requiring lesser emphasis on market shares and potentially greater emphasis on other indicators of market power including infrastructure presence and countervailing buyer power. In addition, given that Ofcom took much of the updated information from press announcements, and these mostly refer to CPs activities in residential markets Ofcom cannot assume that there have not been any developments in competition in mobile or fixed backhaul markets as a result.

236. A network expansion passing an additional 0.71m homes can in this context (in addition to the build figures Ofcom considered for the 2016 Statement)[108] not be dismissed as immaterial. In addition, Ofcom appears to have had no more evidence than sight of some of Virgin Media's plans, on the basis of which it seems to conclude with certainty that "the majority" of Virgin Media's investment was in RoUK (so no assessment of materiality by geography had been conducted).

237. Last but not least, Ofcom's CityFibre sensitivity analysis in the 2017 BCMR Statement also highlights that its geographic boundary analysis and on which the 2016 BCMR Statement and the 2017 BCMR Statement are based, relies on data gathered in April 2014. Now, in November 2017, Ofcom again discounts any further network build, likely resulting in incorrect geographic boundaries.

238. In the above we have set out the areas where Ofcom has not fully taken into account the Tribunal findings nor used updated data to conduct its analysis of geographic markets properly. As a result, its findings on geographic markets are likely to result in finding market power in potentially a material number of areas in the UK where there is none. In the following we set out how the inadequate analysis on geographic markets flows through to Ofcom's assessment of SMP.

III. Ofcom's SMP assessment does not consider the heterogeneous nature of competitive constraints by product and by geography and is therefore not conservative

239. Ofcom notes that in the 2017 BCMR Statement it identifies the markets *"in which [we] can be sure that BT has SMP for the period to March 2019."*[109] Ofcom considers that the following superficial adjustments to its analysis allow for such a statement: (i) adjusting service share thresholds to make up for the fact that the data these rely on date back to 2014; (ii) checking permutations of these service shares between adjacent bandwidths instead of conducting a SSNIP analysis for each bandwidth separately as required.

240. However, without giving consideration to the following factors, it appears to us that Ofcom cannot be sure to have identified a safe harbour:

    a. the differing nature of competition between the three market segments in terms of potential differences in the degree of possible supply side substitution, and the nature of market dynamics (for example considering bidding markets); and

    b. correcting the errors in its analysis of geographic markets which may well result in different service shares by product and by geography

241. Given some of the sweeping assumptions Ofcom had to make in coming to its conclusion on the relevant market and SMP in this way, it cannot claim that the results of its superficial analysis have been reached with certainty, or can be considered a safe harbour.

242. In its assessment of market power Ofcom needs to take into account the nature of competition in the

[108] 2017 BCMR Statement, para 2.23 (c).

[109] 2017 BCMR Statement, para 2.20.

relevant market, established by reference to the relevant market segment, likely to result in a more conservative assessment of SMP by geography. Ofcom sets out the criteria relevant to the assessment of SMP in wholesale leased line markets as including:

a. market shares, market share trends and market concentration;

b. control of infrastructure not being easily duplicated;

c. economies of scale and scope;

d. barriers to entry and expansion;

e. external constraints (this additional criterion is not in the Guidelines);[110]

f. countervailing buyer power (CBP);

g. profitability; and

h. prospects for competition.[111]

243. We agree that in general these criteria are relevant. However, they need to be applied to the market in question, and if the market is not correctly identified, using these criteria will not allow for a safe identification of market power even if market share thresholds are artificially increased to try to reflect the fact that three year old data has been used calculate them, even if all permutations of service shares across incorrect product and geographic markets are checked and SMP thresholds raised.

Market Shares, market share trends and market concentration

244. As set out at paragraphs 176 and following above, a correct analysis of product markets starting from the relevant product market segments could result in lower market shares for BT than those reported by Ofcom. Similarly, at paragraphs 200 and following above, we show how a correct analysis of geographic markets would likely identify areas where BT's market shares are lower, for example as a result of including the average reach of EFM by postcode sector.

245. Furthermore, given that that both MNO backhaul and fixed backhaul are characterised by periodic tendering for larger scale bespoke contracts, this would suggest that for these sectors, market share or market concentration may not be as reliable a measure of SMP as in other markets. As a result Ofcom would need to put even greater weight on other indicators of market power.

246. Unfortunately, as we suggest below, Ofcom's treatment of other indicators of market power have been cursory and did not take into account of the specificities of potential sub-markets nor of the relevant geographic markets. Instead, in the 2017 BCMR Statement, Ofcom copied conclusions on indicators of market power from one geographic market to another in particular on economies of scale and scope; barriers of entry and expansion and countervailing buyer power. Instead, Ofcom should have considered them separately for each product and geographic market, defined by reference to a fresh SSNIP analysis and a proper analysis of geographic markets.

Control of infrastructure not being easily duplicated

247. As noted above in paragraph 177, Ofcom classifies the presence of alternative infrastructure as relevant to competitive constraints, not supply side substitution even though any infrastructure operator offering services in a given area could be expected to supply customers should they request it, potentially within a short period of time (as noted above in relation to the SSNIP analysis, we expect

[110] External constraints are not explicitly mentioned in the SMP Guidelines. We consider that their inclusion here is consistent with the approach in the Guidelines to chains of substitution. Some products potentially in a chain of substitution, but which are found to be outside the market, may still exert some influence on products within it, even if this is relatively weak. See also the discussion of chains of substitution in Annex 4 at paragraph A4.40.

[111] 2017 BCMR Statement, paragraph 2.27.

the relevant time frame to differ by customer segment).

248. The tests Ofcom applies do not result in a conservative assessment of market power:

a. The first leg of the boundary test *"where competition is strongest, and appears likely … to be effective"*[112] is unjustifiably high by reference to most other markets. It does not adjust the threshold of the number of competitors needed to render a market competitive to the nature of the market in question (see also our point on countervailing buyer power in particular in bidding markets below). Requiring there to be an average of five or more competitors in the market before considering the market competitive is not conservative, but rather the opposite. To our knowledge there is no other sector where five or more competitors are needed for a regulator to refrain from heavy ex ante regulation in the SMP framework designed to address single dominance, the most extreme case of market power.

b. The second leg of the boundary test appears to have been designed as a fall back to the first, yet it is still unreasonably stringent, with both ultimately designed to "correct" the results of an erroneous geographic analysis (which is insufficiently granular as we have set out above). The correction Ofcom appears to make for this is to apply percentages to the number of businesses within reach of OCPs, e.g. requiring there to be on average five or more competitors within 100 metres (first leg) or an average of four or more competitors within 100 metres and 90% of businesses within 100 metres of at least two competitors. However, as we have set out above, given the variable size of UK postcodes, the result is that averages are applied equally across geographic areas large and small. We have demonstrated at paragraph 226 above using examples available to us, that applying an adjustment for this bias would most likely lead to a more conservative assessment of market power across additional areas.

c. Considering new network build Ofcom simply dismisses that by reference to a generalisation not based on any evidence: *"In relation to structural indicators of SMP, such as entry barriers and economies of scale and scope, these factors will change only very slowly over time, if at all, in the absence of major technological change."*[113] We have already shown that this bears little relation with the reality of competitive differentiation by geography this at paragraphs 233 above, and contrasted this with the requirement on Ofcom to conduct a forward looking market analysis.

d. EFM is not included in Ofcom's assessment of rival infrastructure. As set out above, this implies the assessment of market power in the several postcode sectors in the vicinity of the CLA (some but not all within the LP) to be found to be uncompetitive when in fact they are not. We also noted that the same is likely to also apply to clusters of postcode sectors elsewhere in the CBDs and RoUK although only Ofcom has the evidence required to show this. We have set out the details at paragraphs 211 and following above.

e. More generally, Ofcom's lack of consideration of heterogeneous competitive conditions at a more granular level than across large postcode areas, in particular terms of its choice of locations where did apply the more stringent Boundary test. We have noted at paragraphs 221 and following above that this caused Ofcom to regulated the contiguous cluster of 11 postcode sectors in the centre of Manchester that are as competitive as the CLA. There, we also explained above that the same is likely to also apply to clusters of postcode sectors in other areas on the UK, although only Ofcom has the evidence required to show the precise impact on the results.

249. In line with what we set out in paragraphs 248a, b and e above, it seems that Ofcom tries to guard against the risk of spurious averages by increasing the number of CPs it requires to be present in the postcode areas it identifies, noting that "*it is necessary for most if not all customers in it to have a good*

[112] CAT BCMR Judgment, para 357, quoting Ofcom's closing submissions.

[113] 2017 BCMR Statement, para 2.22.

choice of suppliers" and adding that *"in an unregulated market there would be scope for a CP with SMP to exploit pockets of market power through bespoke pricing."*[114] This not only misinterprets the reasons for bespoke pricing in these markets (absent SMP as can be observed where non-SMP operators bid for large tenders, and where bespoke pricing is efficient). It also leads to a potentially material number of areas to be regulated when they should not be.

250. The solution to these challenges is not to increase the number of CPs necessary to have infrastructure in the area of a particular postcode to four or even five or more for the postcode to be considered as competitive; instead Ofcom should adjust its method of geographic market analysis so that it better reflects the presence of alternative infrastructure in more granular areas as requested by the European Commission in its Article 7 letter and as commented on by the Tribunal.[115] Unless Ofcom does this there is a real risk that it over-regulates in a material number of areas, thereby reducing the incentives to invest; while not regulating where it would be warranted on the basis of lacking customer choice.

Economies of scale and scope

251. Ofcom's discussion of economies of scale and scope even in the LP and the CBPs is general and makes no specific reference to the relevant geographic markets. In its discussion of economies of scale and scope in the CBDs Ofcom only cursorily notes *"[s]ame analysis as in relation to the LP"*[116]. In relation to the LP Ofcom makes reference to national volumes, comparing the number of leased lines sold by Openreach to those of its rivals including Virgin Media, although relevant for economies of scale and scope in the LP are comparative shares of supply in the LP.

252. Ofcom also refers to economies of scale and scope resulting from Openreach's activities in adjacent markets, including asymmetric broadband. However, it is difficult to see how this could be relevant in establishing the difference in competitive conditions between, say, the CLA and RoUK.

253. Last but not least, if alternative infrastructure in a specific area is found to be sufficient for it to be competitive, this would generally suggest that economies of scale and scope are insufficient to materially restrict competition.

Barriers to entry and expansion

254. As for economies of scale and scope above, Ofcom's discussion of barriers to entry and expansion, finding them to be "high" even in the LP and the CBPs, is general and makes no specific reference to the geographic markets in question. This despite the fact that these must, by definition, be less than in the RoUK, where Ofcom has found competitive conditions to be materially different by virtue of the presence of alternative operators.

255. If Ofcom had considered a more appropriate analysis of product and geographic markets, it would be able to proceed on the basis of identifying specific barriers to entry and expansion in local areas. Generalisations are unlikely to be reliable: barriers to entry may be high because of high infrastructure presence if a market is saturated, yet competitive; they may be low even in the presence of several alternative infrastructures, if local demand is high (for example. areas where growth is higher than average might indicate higher for demand of business access). Barriers again would require a separate assessment by geographic area and it is unsafe to draw conclusions of the basis of general statements which can easily be disproven by reference to underlying facts.

256. In addition, barriers to entry and expansion are likely to materially differ depending on customer

[114] 2017 BCMR Statement, para 2.33.

[115] CAT Judgement paras 396-398 and European Commission Decision concerning Case UK/2016/1849, Comments pursuant to Article 7(3) of Directive 2002/21/EC, 22 April 2016, page13

[116] 2017 BCMR Statement, para 2.82.

segment. For example, barriers to entry in the provision of MNO backhaul are likely to differ materially from barriers in to entry in providing business access. There have been a large number of entrants in this sector in the past ten years and Virgin has been an important supplier and a number of smaller providers are equally active on this market (including many of the PCOs noted by Ofcom).

External constraints

257. Ofcom dismisses external constraints from services outside the relevant market as *"by definition" "relatively weak"*, noting those potentially relevant to be asymmetric broadband and dark fibre sold to end consumers.[117] However, as we have set out in the section on product markets above, we consider that in particular NGA, other FTTx technologies and cable are could increasingly become substitutes – direct and indirect – for leased lines at bandwidths of around 100M and below.

Countervailing buyer-power

258. Ofcom notes that *"[f]or a CBP to be an effective constraint on a seller's market power, the buyer must purchase a sufficiently large proportion of the seller's output and also have a credible alternative source of supply. CBP in leased lines is limited. Indeed, Openreach's largest customer is BT itself (which accounts for between 62% and 68% of Openreach's supply of lower bandwidth CISBO services in the UK, depending on the precise bandwidth considered)."*[118]

259. As noted above, Ofcom does not apply the Modified Greenfield approach consistently but does so only superficially and where it supports its argument (see the boxed text after paragraph 177).[119] Under a Modified Greenfield approach Ofcom's market analysis needs to conduct its market analysis under the assumption of no wholesale regulation in the market concerned. In the paragraph above, Ofcom simply states the fact that BT is Openreach's largest customer. This does not provide any information about countervailing buyer power in the absence of regulation. It merely states the obvious that absent SMP regulation and the BT Commitments, BT would most likely be vertically integrated.

260. More importantly, Ofcom does not take into account how the BMCR market segments (business access, MNO backhaul and fixed backhaul) would be likely to function absent regulation. For example, absent regulation in particular MNO backhaul would most likely be sold by a vertically integrated BT bidding for large scale contracts. While this may not be the case for Openreach, because Openreach's pricing is constrained to list prices as a result of SMP regulation, this can be observed in the way other vertically integrated operators such as Virgin Media conclude long term contracts to provide MNO backhaul, or indeed in other markets in the EU and internationally.[120]

Profitability

261. In the 2017 BCMR Statement Ofcom notes, by reference to data presented in the 2016 BCMR Statement, that *"BT's ROCE for Lower Bandwidth CISBO outside the WECLA was 22% in 2014/15, down from a peak of 30% in 2012/13 but still well above BT's WACC (9.8%). BT's high ROCE, despite being subject to a charge control intended to align charges with costs, is consistent with SMP."* However, in its 2016 BCMR Statement Ofcom itself was less definitive than this about the evidential weight that could be placed on BT's profitability as an indicator of SMP, noting: *"… profitability information is only available at the level of the markets where BT was found to have SMP in the*

[117] 2017 BCMR Statement paras 2.44, 2.63, 2.86. Ofcom here refers back to its findings in the 2016 BCMR, which relied on data from 2014 and 2015. We consider that as NGA, other FTTx and cable technologies advance, symmetry and other characteristics of leased lines are likely to continue to lessen over time.

[118] 2017 BCMR Statement, para 2.45.

[119] The Modified Greenfield approach requires that when analysing markets regulators should consider what the market would look like absent wholesale SMP regulation in the market under consideration; while assuming that other regulation (for example in neighbouring markets, or consumer regulation) exist. This is to avoid a circularity of argument.

[120] Nick Wood, Virgin Media Business wins £100m backhaul contract with UK's MBNL; https://www.totaltele.com/467442/Virgin-Media-Business-wins-100m-backhaul-contract-with-UKs-MBNL

previous market review (i.e. for the WECLA and non-WECLA areas). Thus, the profitability data available limit the extent to which a comparison of profitability can support the assessment of competitive conditions between geographic areas not previously defined as separate geographic markets."

262. We would agree with Ofcom's own caveats in the 2016 BCMR Statement, and we would add that Ofcom considers BT's profitability across both the product and geographic markets it defined without conducting a proper SSNIP; and by reference to outdated data. Ofcom only considered BT's profitability and not anyone else's in this market, as we set out in BT's previous response (BT Response to Ofcom's consultation document, Part B, 11 August 2015, paragraph 12.112). Furthermore, BT's profitability needs to be considered in the context of how regulation has been applied in these markets in the past years (in particular considering the impact of basket design on pricing and the rationale for baskets, namely to enable what Ofcom considers to be efficient pricing signals), and needs to be assessed over a sufficiently long time period to avoid spurious results.

Prospects for competition

263. See paragraphs 151 to 154 and paragraphs 233 and following above.

D. THE MARKET POWER ASSESSMENT FOR THE CORE IS FLAWED AND NOT CONSERVATIVE

264. Ofcom's assessment of market power in the core is likely to result in regulation of up to 300 sites that should not be regulated because Ofcom misunderstood the nature of the Cablelink product. This misunderstanding appears to have led Ofcom to assume that where the product is bought by a third party rather than the PCO itself, the competitive constraint on Openreach is weaker than where it is bought by the PCO. We illustrate below that this has nothing to do with an "indirect constraint" in the meaning of an indirect constraint from a downstream product on a wholesale market.

265. In its 2016 statement Ofcom considered that *"an exchange will be effectively competitive where there is a sufficient degree of interconnection for CPs not to be reliant on BT for backhaul services. As some CPs will need to contract with multiple providers to obtain a resilient solution, this requires that a minimum of two rival backhaul services should be potentially available for an exchange to be found competitive"*.[121]

266. In its 2017 BCMR Statement Ofcom reflects the Tribunal's comment that it "lacked any real evidence to support, and did not actually investigate the point made by Six Degrees", that "some PCOs had connected to a number of exchanges solely for their internal backhaul purposes and were not able to provide competitive backhaul for other CPs."[122] As a result, for the 2017 BCMR Statement and instead of investigating the materiality of Six Degrees' claim, Ofcom reviewed its criteria to become more not less stringent in the Temporary Decision. Ofcom now consider it necessary for a minimum of three or more PCOs to be indirectly or directly connected, or for there to be at least two PCOs directly connected.[123] In the following we illustrate that this is not only a meaningless adjustment and of no incremental benefit to CPs. Indeed, where two "directly" or "indirectly" connected PCOs are present, this will suffice for other CPs to have two alternative providers to Openreach as long as these are both willing to supply externally. The latter is a question we would expect Ofcom to investigate as the Tribunal has required it to.

267. Focussing now on the issue of what is termed "direct" and "indirect" presence at an exchange, there has been some confusion about what this means in practice. The Tribunal noted that Ofcom's view that indirect presence would impose a weaker constraining effect compared to a direct presence was "*well reasoned and clearly within the scope of Ofcom's reasonable judgement*".[124]

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[121] 2016 BCMR Statement, A 15.78.

[122] CAT Judgement, para 442(2).

[123] 2017 BCMR Statement.

[124] CAT Judgement, para 443.

268. We consider that Ofcom's view may have been well reasoned but its reasoning was not consistent with the underlying facts. BT's point was perhaps misunderstood by Ofcom because of the similarity in terminology Ofcom tends to use when referring to "indirect constraints" a downstream market may place on a hypothetical monopolist upstream; and such indirect constraints are, in general, accepted to be weaker than direct competitive constraints.

269. However, the term "indirect" in the present case refers to a physical link, sold by Openreach to allow a Principal Core Operator's (PCOs) network, running up to a footway box outside the exchange, to be connected to a CPs collocated equipment space in the exchange.[125] PCOs usually build up to the footway box to connect to BT's exchange either because they want to sell backhaul to CPs present at the exchange or for their own purposes. In some cases, it is the collocated CP who buys the Cablelink product connecting it to the PCOs footway box, in others it is the PCO themselves. The latter is referred to by Ofcom as direct, while the former is referred to as indirect presence. Which of these it is has no bearing on the likelihood or not of CPs having the freedom to select that PCO for its service. The only possible barrier could be that for some reason the PCO does not want to sell backhaul. This could have commercial reasons and it is of course right, that it should be verified whether those thus connected might be – in principle - willing to supply backhaul competitively to a third party, or not.

270. Ofcom, in the 2016 BCMR Statement and the 2017 BCMR Statement, makes a distinction between direct and indirect presence at the exchange. In the 2017 BCMR Statement Ofcom provides an example of a direct connection where Vodafone has bought Cablelink to connect its own backhaul network to it as opposed to a situation where TalkTalk bought the Cablelink product in order to connect to Virgin's mobile network. However, as explained above, who bought the regulated Cablelink product has no bearing on the degree to which Virgin's presence at the exchange may be a realistic choice for a CPs backhaul needs. Where TalkTalk bought the Cablelink product this indicates that TalkTalk is either using or ready to use Virgin Media as a backhaul provider, should Virgin Media be, in principle, willing to provide it to an external buyer. Similarly, any CP other than TalkTalk could, by purchasing the regulated Cablelink product from Openreach, use it to connect to Virgin Media's network at the exchange.

271. As a result of the above confusion, Ofcom has now concluded that the extent of the Competitive Core has a maximum reach of 192 sites (107 new sites in addition to the previous 85 sites, all based on out-dated data). Yet, it has not adequately investigated the competitive nature of the other approximately 300 sites where Ofcom itself previously identified two Principal Core Operators (PCO) to be physically connected to the building, thanks to the existence of Cablelink.[126] This is not a conservative approach to imposing SMP remedies.

E. REFLECTING THE HETEROGENEITY OF COMPETITIVE CONDITIONS IN REMEDIES IMPOSED

272. As set out above, we do not consider Ofcom has given sufficient consideration to the heterogeneity of competitive conditions when conducting its market definition analysis and SMP assessment. This has consequences for Ofcom's proposals on remedies. In particular – and as we set out in the next section - remedies need to be objectively justified by reference to the competitive conditions found.

273. This has also been emphasised in the European Commission's Article 7 letter to Ofcom, where it expressed it had *"questions regarding the geographic differentiation of remedies as proposed by Ofcom"*, noting in particular that *"the approach could be further developed in order to more accurately reflect the competitive conditions in a given area"*.

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[125] The PCOs Ofcom identifies are Vodafone, Virgin Media, Colt, Gamma, Interoute, KCOM, Level3, Neos and Zayo. See the 2016 BCMR Statement, footnote 574.

[126] 2016 BCMR Statement, Annex 15, A15.84 -85 Ofcom state there are 407 exchanges with "BT+2 any". We think these should be designated as Core, constituting an additional 300 exchanges in addition to the 107 designated as part of the core in the 2017 BCMR Statement (107+300+407).

274. The Commission goes on to note that a *"more granular geographic differentiation of remedies for areas with less than five or six competing infrastructures could reduce the likelihood that alternative providers - having already deployed or committed to deploy infrastructure – would be incentivised to downscale their investments or even exit the market because of the imposition of remedies undermining their business cases. In this respect, the Commission notes that OFCOM identified boundary test criteria for the identification of competitive areas, without at the same time providing clear characteristics which would qualify other areas in the UK for the imposition of lighter remedies. This would in view of the Commission call for an approach which would help to identify in an unambiguous manner all those areas in the UK where infrastructure competition has already developed to an extent that the imposition of lighter remedies would be appropriate."*[127]

275. BT equally considers that Ofcom needs to ensure that any remedies it imposes are objectively justified and proportionate to the specific issues identified, by reference to properly defined product and geographic markets.

[127] European Commission Decision concerning Case UK/2016/1849, Comments pursuant to Article 7(3) of Directive 2002/21/EC, 22 April 2016, p.13.

5 The Proposed Dark Fibre Remedy

A. THE LEGAL TESTS OFCOM HAS TO MEET TO IMPOSE THE NEW DFA REMEDY

277. Notwithstanding our concerns regarding the market definition and SMP analysis which underpins Ofcom's proposals to introduce the new DFA remedy, we are also concerned that Ofcom's proposals do not meet the legal tests for imposing an SMP remedy.

278. As outlined by Ofcom at paragraph 4.94 of the DFA Consultation, when considering what SMP conditions to impose as respects (a) the provision of network access to the relevant network or (b) the use of the relevant network, it must take into account, in particular, six factors set out in section 87(4) of the CA 2003. Openreach has specific comments on three of these factors:

a. The technical and economic viability (including the viability of other network access products, whether provided by the dominant provider or another person), having regard to the state of market development, of installing and using other facilities that would make the proposed network access unnecessary;

b. The feasibility of the provision of the proposed network access;

c. The need to secure effective competition (including where it appears to Ofcom to be appropriate, economically efficient infrastructure based competition) in the long term.

279. Further, the imposition or modification of any condition under s 45 is subject to the test in s 47(2) CA 2003, which requires in particular that the condition or modification is:

a. objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates; and

b. proportionate to what the condition or modification is intended to achieve.

Necessity of the proposed dark fibre remedy

280. In the present circumstances, Ofcom is seeking to impose an incremental remedy. In this regard, the circumstances are different from when Ofcom considered whether to impose a dark fibre remedy in 2016. At that time, its consideration focused on what the relevant balance should be in a package of remedies. By contrast, in the present circumstances, Ofcom has already imposed a suite of active remedies under the 2017 BCMR Statement and is now seeking to impose an additional DFA remedy, which is unnecessary.

281. Paragraph 117 of the Commission Guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services provide that "Community law, and in particular Article 8 of the framework Directive, requires NRAs to ensure that the measures they impose on SMP operators under Article 16 of the framework Directive are justified in relation to the objectives set out in Article 8 [the same objectives set out in Section 87(4)] and are proportionate to the achievement of those objectives. Thus any obligation imposed by NRAs must be proportionate to the problem to be remedied". In essence, SMP Conditions are imposed to remedy the competition concerns identified in a particular market.

282. The 2017 BCMR Statement identifies a number of competition concerns in light of the SMP that Ofcom has identified. These competition concerns are outlined in the table below. However, Ofcom then imposes regulatory remedies to address each of these competition concerns.

Table 2

Competition Concerns identified in 2017 BCMR Statement and Remedies imposed

Competition Concern Identified	2017 Statement, paragraph	Remedy imposed to address this
Incentive and ability to refuse access at a wholesale level	3.13	Network access obligation
Incentive and ability to discriminate in favour of its own downstream divisions	3.21 and 3.56	Requirement not to discriminate unduly and Equivalence of Inputs and Accounting Separation obligations
Incentive and ability not to supply some or all interconnection services (which are necessary to consume BT regulated products)	3.24	Requirement to meet reasonable requests for interconnection and accommodation services
Incentive and ability to discriminate in favour of its own needs in allocating accommodation in BT exchanges	3.24	Requirement to meet reasonable requests for interconnection and accommodation services
Lack of transparency to monitor potentially anti-competitive behavior	3.34	Requirement to publish a reference offer
Reduced incentives to invest and market instability if uncertainty over the terms and conditions on which other providers will purchase wholesale services	3.39	Requirement to notify changes to charges, terms and conditions
Risk that CPs are finally exposed by changes to wholesale prices or technical charges as they have insufficient time to react to changes to wholesale charges, terms and conditions or technical changes	3.39 and 3.44	Requirement to notify changes to charges, terms and conditions and to notify changes to technical information
Incentive and ability to withdraw or no longer supply products, the availability of which CPs have developed their business models	4.7 and 4.15	Specific network access obligations
Risk of adverse effects arising from BT setting and maintaining some or all charges for Lower Bandwidth CISBO services at an excessively high level.	5.9 and 3.49	Charge control and fair and reasonable charges obligation where no charge control applies and cost accounting obligations
Risk of margin squeeze	5.14 and 3.49	Charge control and fair and reasonable charges obligation where no charge control applies and cost accounting obligations
Risk that BT will not continue to improve its quality of service performance and instead allow it to deteriorate again impacting detrimentally on all downstream providers of leased lines, including BT's downstream businesses, and ultimately to the detriment of end users.	6.7	MSLs

Source: BT analysis of Ofcom's 2017 BCMR Statement

283. In the DFA Consultation, Ofcom does not identify any additional competition concerns to those identified in the 2017 BCMR Statement. It has already imposed a range of regulatory remedies (outlined in the table above) to address the competition concerns identified. In these circumstances, unlike in the 2016 BCMR when Ofcom was considering the correct package, or

balance, or remedies to impose in the round, Ofcom is now considering imposing an incremental remedy. It needs to consider why a dark fibre access remedy is proportionate in the context of viable active remedies which already exist and which, in Openreach's view, make a DFA remedy unnecessary. Ofcom's analysis in this regard is scant.

284. The network access obligations and active remedies already imposed on BT under the 2017 BCMR Statement are viable network access products. Ofcom appears to rely on the following benefits of dark fibre over and above the existing active remedies (i.e. the necessity of the dark fibre remedy): the potential for cost savings that Ofcom claims dark fibre could facilitate; the scope for innovation facilitated by dark fibre; and the potential for the reduced regulation of active services in future.

285. However, as detailed further in section 5.B.I(ii) and Annex A below, from the information that is currently provided in the consultation document, we consider that Ofcom has materially overstated the scale of cost savings that dark fibre will enable.

286. Further, as also detailed further in section 5.B.I(iii) below, the scope of innovation for a dark fibre product, especially when limited to Lower Bandwidth CISBO services, is minimal (as compared with the innovation that is possible using Openreach's active portfolio).

287. Finally, the potential for reduced regulation of active services in future is a long term goal; whilst we welcome such an objective, Ofcom's proposed method (the introduction of a DFA remedy targeted at Lower Bandwidth CISBO services) for achieving that goal is misplaced (see section 5.B.I(iv)).

288. Further, given the long term nature of the goal, we fail to understand the pressing need for the introduction of the remedy by 1 April 2018, rather than allowing a normal consultation period leading through to a decision within the normal timeframes Ofcom has previously adopted. The current market review period runs until 31 March 2019 and the DF remedy is not required in order to protect competition in the SMP market in this timeframe. Ofcom has already imposed wholly viable network access remedies under the 2017 BCMR Statement, which protect against any incentive and ability which BT may have to exploit any position of SMP. Nor even is the DF remedy necessary to promote competition over such a short period, when this can all be considered properly in the next full BCMR. It follows that Ofcom has failed to demonstrate that the new DFA remedy is necessary and proportionate. For the reasons set out above, it is not.

Feasibility of the proposed dark fibre remedy

Feasibility of giving BT commercial freedom to restrict the usage of dark fibre to prevent it being used for core conveyance and/or bandwidths above 1G

289. Ofcom asserts at paragraph 3.39 of the DFA Consultation that "BT would be able to implement an effective contractual restriction to restrict usage of its dark fibre product to prevent it being used for core conveyance and for bandwidths above 1G if it so chooses and such restrictions would not be unduly burdensome for BT to administer or monitor".

290. For contractual restrictions to be effective, there needs to be (i) the ability to monitor compliance with the restriction and (ii) an effective enforcement mechanism. These are both equally necessary and co-dependent fundamental requirements. Simply relying on the threat of sanctions (such as termination of service) or claims that major users of dark fibre would not want to be perceived as "untrustworthy business partners who were prepared to breach contractual obligations" misses the point. If Openreach cannot monitor usage, it will not be able to identify those in breach and so would not be able to deploy any sanction (however effective that sanction might be).

291. Further, it is not only Openreach's direct customers that consume Openreach products: our customers sell on to resellers and end-users who could misuse the product absent any effective ability to monitor compliance and hence to enforce against breach. Indeed we already have seen instances where end-users remove Openreach ADVA boxes from our active circuits,

demonstrating the real propensity for misuse. In the case of active remedies, it is very easy and effective to monitor misuse (in this example, where the active ADVA box has been removed) and so there is physical evidence of non-compliance with contractual restrictions. This would not be the case with a contractual restriction on the bandwidth usage of dark fibre.

292. Ofcom wrongly presumes that Openreach can effectively monitor and BT enforce a limitation of the dark fibre remedy to the Lower Bandwidth CISBO market through contractual restriction. In fact, such a restriction (on which no evidence has been gathered and consulted on) would take time to negotiate (which in turn would further delay implementation timescales, as to which see further below), would be susceptible to dispute, and would be difficult to enforce effectively without significant investment in systems development, audit processes and suitably trained staff which will add significantly to up-front and ongoing implementation costs.

293. Contractual restrictions on their own will be insufficient: at least some ability to monitor compliance would be required. Monitoring options have significant associated systems and development costs. Some would limit the distances that can be supported and would require access and local power. Others render the product akin to an active product. We estimate that the cost of monitoring every service would be economically unviable such that the existing EAD box and associated management is likely to be the cheapest solution. Before its change of thinking on dark fibre, Ofcom agreed that the challenge we face in effectively monitoring usage of a dark fibre product would be very significant. These points are developed further at paragraphs 418 to 447.

294. Ofcom further notes that in the context of another passive remedy, PIA, BT was able to adopt a simple, contractual solution to reflect the scope of the PIA remedy. However, the two restrictions are not comparable. The PIA restriction on usage is a restriction as to network design (that PIA can only be used for the deployment of NGA network). There is a manual process for the ordering and validation of PIA (which can allow Openreach to identify whether proposed network design would support an NGA deployment or whether it looks more like a point-to-point leased line service used for business connectivity). Further, it is generally possible to tell whether PIA is being used as an NGA deployment: it is physically apparent.[128] By contrast, the design of the network will not tell Openreach anything about the bandwidths of a DFA circuit; monitoring of such a restriction is only possible by connecting some form of electronic equipment. See further paragraphs 448 to 450 below.

295. We expand on these points further at sections 4.B.II(iii) and 4.D below. However, given the difficulties in terms of monitoring the bandwidth usage, and the concomitant risk leakage of usage for deploying VHB services, we do not consider that Ofcom's proposals for a new DFA remedy are feasible or proportionate.

Feasibility of implementation timescales

296. Before launching this consultation, Ofcom had not engaged with Openreach to understand the timescales within which Openreach would be able to conclude preparatory work required before launching the new dark fibre product. Yet Ofcom still asserts at paragraph 3.55 of the DFA Consultation that "BT will be able to conclude [preparatory work] which it needs to undertake before launching the dark fibre product within a period of one month."

297. This assertion is misplaced. As set out at section 4.B.I(iii) below, the new dark fibre product is a different product from that which BT was required to provide under the 2016 BCMR. There are a number of steps which would be required to ready a product for launch and it is simply not feasible to complete these by 1 April 2018. The steps required to ready a new dark fibre product for launch are set out in detail at section 4.D.II below. For those reasons, it will not be feasible

[128] Notwithstanding these points, Openreach has concerns that the current contractual restriction is not fully effective.

to provide network access on the terms mandated by Ofcom by 1 April 2018 and a remedy requiring BT to do so would be disproportionate.

Need to secure effective competition in the long term

298. As to the need to secure effective competition in the long term, Ofcom has noted in the 2017 BCMR Statement that it is currently prioritising work on remitted matters (i.e. carry out a full market definition and SMP analysis) and hopes to reach conclusions by March 2019.[129] We do not understand the need to press for the introduction by 1 April 2018 of a dark fibre remedy, rather than allowing a normal consultation period leading through to a decision within the normal timeframes which Ofcom has previously adopted: Ofcom's proposal can be considered properly in the next full BCMR once it has gathered and analysed all relevant evidence in the normal way. This is particularly so in circumstances where Ofcom has already imposed a range of emergency regulatory remedies to address its immediate competition concerns.

299. In aggregate, these factors show that Ofcom should have serious misgivings and concerns in relation to imposing a new dark fibre remedy in the Lower Bandwidth CISBO markets. It plainly does not currently meet the threshold of a proportionate remedy at this stage. We urge Ofcom to reconsider its proposed course of action.

Objectively justified

300. Ofcom notes that it considers the proposed dark fibre access remedy conditions and directions are objectively justifiable as they "*facilitate and encourage access to BT's network and therefore promote competition to the benefit of consumers*". As noted above, Ofcom has already imposed network access obligations in the form of active remedies that achieve this objective (network access obligation on fair and reasonable terms and conditions, leased line charge control). As such, it is not clear why this offers an objective justification for the imposition of a new remedy in addition to those remedies which have already imposed (and which, as noted above, already address the competition concerns Ofcom has identified in these markets).

301. Further, given the significant risks which arise from the imposition of a dark fibre remedy (see further section B below), which we consider outweigh the potential benefits of the introduction of a dark fibre remedy (particularly for Lower Bandwidth CISBO services), we do not consider that Ofcom has satisfied the legal test that the remedy is objectively justified.

Proportionality

302. Ofcom considers that the imposition of a dark fibre access remedy is proportionate since it is "targeted at addressing the market power that [Ofcom] propose[s] BT holds in these markets and do not require it to provide access if it is not technically feasible or reasonable. This is not an assessment of the proportionality of a remedy. In particular it does not consider whether the benefits of imposing such a remedy outweigh the risks.

303. We consider that Ofcom overstates the benefits of a dark fibre access remedy restricted to usage for Lower Bandwidth CISBO services and understates the risks of the introduction of such a remedy. In doing so, it wrongly concludes that the introduction of a dark fibre remedy is proportionate.

304. A dark fibre remedy amounts to a radical and controversial new approach to the regulation of business connectivity in the UK. Ofcom is clear that it expects such a remedy to replace active remedies over time. In suggesting that Openreach could seek to limit usage of a dark fibre product to Lower Bandwidth CISBO services, Ofcom wrongly assumes that many of the risks it identified in relation to the introduction of a dark fibre remedy under the 2016 BCMR no longer

[129] 2017 BCMR Statement, para 1.16.

apply and that the remaining risks are minimal.[130] [131] Meanwhile, it asserts that the purported benefits of a dark fibre remedy justify its introduction (despite such benefits being largely unquantifiable and unknowable).

305. We consider that Ofcom's purported balancing of the benefits and risks is flawed, and inadequate in light of the radical nature of a dark fibre remedy. The introduction of a dark fibre remedy at this stage, before Ofcom has gathered new data and carried out a comprehensive market analysis, is disproportionate, and as such its introduction is inconsistent with Ofcom's duties.

[130] DFA Consultation, para 4.64.

[131] DFA Consultation, para 4.87.

B. OPENREACH'S VIEWS ON OFCOM'S ASSESSMENT OF THE BENEFITS, RISKS AND COSTS OF THE PROPOSED DARK FIBRE REMEDY

306. Openreach does not consider Ofcom has demonstrated that the benefits of introducing a dark fibre remedy limited to the Lower Bandwidth CISBO markets outweigh the costs in the period up to March 2019, nor when taking a longer term view. As such, Openreach does not consider the introduction of a dark fibre remedy would be proportionate at this stage. This section outlines where we consider Ofcom has overstated the benefits of dark fibre and understated the risks. In contrast to Ofcom's view that the benefits of dark fibre would be significant and the risks minimal, Openreach considers the benefits are minimal and the risks significant.

I. Benefits

307. The benefits of the proposed dark fibre remedy are over-stated. They have not been substantiated by Ofcom, even in a CISBO market with no bandwidth break. They are even less clear if (contrary to what is suggested by Ofcom) where take up is limited to the newly defined Lower Bandwidth CISBO markets. This section contains our comments in relation to Ofcom's assessment of:

    a. the likely take-up of dark fibre;

    b. cost savings;

    c. innovation; and

    d. the potential relaxation of active remedies.

308. Put simply, Ofcom's take up and cost savings estimates are highly uncertainty and do not bear scrutiny. We make some reasonable adjustments and find these benefits to be considerably lower. The claims made about innovation are speculative and, to the extent they exist, can be realised in the absence of dark fibre by Openreach acting assertively to keep pace with innovation demand and by CPs submitting any Statements of Requirements through the ordinary process. Before its change of thinking on dark fibre in the 2016 BCMR, Ofcom agreed.[132]

309. More generally, we note a degree of inconsistency in Ofcom's positioning of the benefits (within the consultation and over time): on the one hand they are "significant" in comparison to alternative active products; on the other hand, they are not of sufficient magnitude to have a material impact on rival investment.[133] In evidence to the CMA last year, Ofcom expected limited impact (on CityFibre) as a result of dark fibre from changes to prices and demand in the market in which CityFibre operated (i.e. the Lower Bandwidth CISBO market) suggesting minimal take up.[134]

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[132] CAT Judgement in Colt v Ofcom, November 2013, para 100: "OFCOM's response to these claims was, in essence, that by and large BT had "kept pace" with the demands of innovation…and that business connectivity in the UK was, in Colt's own response to the June BCMR Consultation "world class". OFCOM further claimed that active remedies could deliver similar benefits in innovation."

[133] DFA Consultation, para 4.76.

[134] Witness Statement of Peter Culham in Case 1261 CityFibre v Ofcom, 17 November 2016, para 104: "Ofcom carefully assessed the impact of the dark fibre remedy on CityFibre's business (as well as the businesses of other rival infrastructure operators). Ofcom concluded that the dark fibre remedy would not materially affect the prices of and demand for the connectivity used by the great majority of CityFibre's customers, since they operate in sectors which currently consume bandwidths of 1G and below. Given this, its impact on CityFibre's business would be limited."

(i) Ofcom's assessment of the likely take-up of dark fibre

310. Ofcom notes that the benefits of dark fibre will be realised when providers take up dark fibre services.[135] It therefore assesses situations where providers may prefer to use dark fibre as opposed to an active leased line.

Benefits were focused on the VHB segment in the 2016 BCMR Final Statement

311. Openreach is surprised at Ofcom's proposal to introduce a DFA remedy solely for Lower Bandwidth CISBO services, given the focus of the benefits of the introduction of a DFA remedy during the 2016 BCMR (on which Ofcom still seeks to rely, see paragraph 3.9 of the DFA Consultation) was on benefits which would principally arise in the VHB segment. The quantitative and qualitative discussion was centred on 1G and above.

312. The Expert Report of Mr Matthew (Ofcom) in BT's BCMR appeal made this clear:

a. At para 73 (e) he suggested that the pricing structure "*will result in a very modest impact on BT's pricing structure overall. It is expected that there will be reductions in the prices of some VHB circuits and EBD to remain competitive with dark fibre (but there should be no downward pressure on 1Gbit/s and below prices)*".

b. At para 138, the text is clear that the impact of dark fibre was not expected to be below 1G: "*Ofcom concluded that, since rival CPs supply of business connectivity is dominated by active products of up to and including 1Gbit/s, the primary impact of its remedy package for the current review period would come from the LLCC. Ofcom concluded that the additional impact of the dark fibre remedy on efficient investment would not be significant, and would be offset by the benefits of introducing the dark fibre remedy*".

c. Footnote 185 mirrors the argumentation in paragraph 138 and explicitly states that "*Third, the pricing approach limits the impact of the dark fibre remedy to VHB and commercial dark fibre products, which represent a relatively small proportion of the total supply of business connectivity*"

313. The following text in the Preliminary passives consultation of November 2014 is also relevant here:

> *'6.6 CFI Respondents' interest in passive access was focused primarily on two applications: mobile backhaul and fixed backhaul. For these applications, dark fibre was the favoured remedy. However, some respondents were interested in using duct access to deploy access networks to serve business customers and to extend existing access networks to connect additional business sites.*

314. In relation to pricing at EAD 1G minus, the Preliminary passives consultation of November 2014 is also relevant here:

> *7.34 A disadvantage of this potential solution is that it may also restrict the use of passive access to the provision of downstream services with a greater value than the reference product. For example, if 1Gbit/s EAD is used to set passive prices, then investment and innovation in passives is likely to be focused on services at or above 1Gbit/s. This could potentially limit the profitability of using dark fibre for sub-1Gbit/s services even if low bandwidth services could be profitably supplied using dark fibre under a pure cost-based approach for passive access.*
>
> *7.35 However, if high bandwidth service provision is where entry using dark fibre is most likely to be focused, the potential restriction on use may not have a significantly detrimental effect on the extent of benefits realised, while retaining the advantage of reducing the*

[135] DFA Consultation, para 4.5.

extent of rebalancing of prices that is required to maintain cost recovery. Moreover, we note that over time demand for bandwidth is increasing rather than decreasing.

The potential scale of any alleged benefits is low

315. Ofcom provides almost no evidence on future switching to DFA for Lower Bandwidth CISBO services. Table 5.2 gives a range of migration of existing 1G circuits of 2% - 3%: some 1277 circuits[136] in the period April 2018 to March 2019 but nothing for the future at all. Revealingly, Ofcom shows no migration to DFA of existing 100M circuits either within this period or outside it.[137] Even on Ofcom's approach, it follows that the scale of any alleged benefits of the proposed dark fibre remedy is low.

316. Ofcom provides no basis in which any putative benefits of DFA could be attributed to any meaningful volume base. It is not clear what implicit assumptions Ofcom might be making on the speed of migration up from 100M to 1G and thus the extent to which the switch to DFA might be assumed by Ofcom to take place. This is in direct contrast to the previous DFA proposal where one could see the sectors and broad volumes of VHB at exposure and sectors of relevance could be understood and the issues debated. The current proposal is therefore lacking by comparison, substantially limiting our ability to respond in this consultation.

317. As noted at section 5.E.II below, we consider that Ofcom has in fact materially underestimated the likely take up of dark fibre for Lower Bandwidth CISBO services and has therefore not made sufficient provision in the LLCC to account for this. We note that this take-up is not efficient take-up that drives the sort of benefits that Ofcom is seeking to foster through the introduction of dark fibre (e.g. innovation opportunities or the type of efficient cost saving opportunities which Ofcom foresees). Rather, the take-up is driven by cost arbitrage opportunities through the aggregation of lower bandwidth services (i.e. 100M services) onto a dark fibre or the cannibalization of 100M services by dark fibre as a result Ofcom's pricing of dark fibre and ✂ . This is liable to lead to dark fibre being used for inefficient arbitrage opportunities, leading to, for example the stranding of assets.[138] Such an increase in take-up cannot therefore be counted as a benefit of the introduction of a dark fibre remedy.

Primary motivation for DFA from infrastructure light CPs

318. Ofcom fails to recognise the motivation of the (mostly) infrastructure absent CPs who have been arguing most vociferously for DFA. It was patently clear from the various submissions of the CP Group who in fact made no attempt to hide their reasons: the advantage of DFA was all to do with breaking the bandwidth gradient.[139] There are plenty of statements on public record as reiterated in this submission.

319. This approach was fully compatible with the timeframe that BT set out to Ofcom of how the switchover would occur. The first priority was in MNO and fixed backhaul for VHB circuits and then this would extend into the access network to take benefit of aggregation opportunities and gradually a complete shift over with new circuits also moving directly to DFA.

320. Ofcom's new proposal is not compatible in this context unless CPs believe that Ofcom will swiftly move to relax the restriction on VHB circuits and/or BT will not be able to enforce it. The cost-

[136] DFA Consultation, Table 5.4.

[137] It would appear that Ofcom has in fact used the same underlying assumptions as in the 2016 BCMR FS.

[138] This is likely to be particularly widespread for Lower Bandwidth CISBO services as CPs would have to switch to new fibre (rather than use existing fibres) to ensure continuity of service, whereas for backhaul (more common for VHB services), CPs have resilient routes so may be able to use the fibres already have in place. Note, Ofcom's original DFA proposal also led to inefficient unused fibres where CPs planned to wholesale backhaul for other CPs across single fibres.

[139] A slightly different set of arguments has more recently advanced by some sections of the mobile industry for 5G.

benefit framework is hampered by the lacuna which is of Ofcom's own making.

321. Previously, Ofcom imagined that the volume impact of DFA would primarily be focused on strong competitive effects in the VHB marketplace and a gradual shift out at lower bandwidths.

322. At paragraphs 4.63 and 4.64 (b - c) of the DFA Consultation, Ofcom now seems to count as a benefit of its current proposal the absence of possible downsides of its previous proposal namely pressure on VHB prices and services with consequential leakage into infrastructure investment incentives.

323. This is a most surprising approach for two reasons. First, it suggests that Ofcom did have concerns with its original proposal that were not obviated with its "1G active minus pricing". Second, it is misplaced in any case. The case for the current proposal has to be justified on its own terms as a matter of law, not by comparison to an alternative which may or may not have disadvantages by itself.

324. In summary, as originally envisaged, DFA could not be 'targeted' as such at any particular market but Ofcom chose to price in a way which had that effect. What matters in practice is take-up based on this pricing and not targeting *per se*. The supposed benefits of the previous proposal (services switching to DFA from VHB) are simply carried over into the current proposal even though there are no substantive volumes which are moving over to DFA in any case from the Lower Bandwidth CISBO market and none at all in theory from VHB.[140] This begs the obvious question – where does Ofcom imagine the benefits will arise?

325. Ofcom cannot seek to rely on its 2016 BCMR assessment in support of the benefits of DFA here (given it related to a different and wider product set). It has provided little to no further relevant supporting material/explanation in the DFA Consultation to justify why it considers there will be take-up in the Lower Bandwidth CISBO market. To the extent that there is significant take-up, it will be driven by cost or arbitrage opportunities rather than the innovation benefits which Ofcom claims.

(ii) Equipment cost savings

326. One of the principal benefits that Ofcom considers will arise from the introduction of dark fibre for Lower Bandwidth CISBO services is the scope for cost savings (and therefore productive efficiencies) compared with active products. Our comments on Ofcom's assessment of the potential for cost savings is set out below.

The prevalence of different equipment configurations and functionalities

327. At Table 4.1 of the DFA Consultation, Ofcom sets out its estimated cost savings under a range of scenarios for different equipment configurations. Even on Ofcom's own view there are a range of scenarios in which equipment savings would be small or non-existent. For example, Ofcom predicts cost savings of only 4% in scenario 2(c) compared to the price of an active EAD 1G service and no savings at all for scenarios 3(b) or 3(c).

328. Ofcom does not set out any analysis of the prevalence of each scenario, instead it relies on its regulatory judgment of the frequency of the different configurations. This is a matter which requires further investigation by Ofcom and the collection of robust evidence, not the exercise of regulatory judgment.[141] We are therefore pleased that Ofcom is seeking further information on

[140] Unless of course Ofcom does have some views on this which are not in the Consultation.

[141] Para 4.27 "it is our current judgment, based on our understanding of the industry, that Scenario 1 is a common situation, and that Scenario 2 is less prevalent, but not unusual, whereas we consider Scenario 3 to be less prevalent and very rare". We do not consider that this is an appropriate matter on which Ofcom can rely on regulatory judgment. Evidence would be available if Ofcom sought data from CPs. Rather regulatory judgment gives Ofcom a degree of discretion to decide on what matters it places most weight (for example, whether to place most weight on allocative or productive efficiencies).

this matter under Question 4.2 of the DFA Consultation. It is vital that Ofcom investigates further the prevalence of each of the different equipment configurations. Whether there are likely to be significant benefits in the way of cost savings will depend in large part on the prevalence of the different configurations.

329. In order to assist Ofcom, we set out below in Table 3 our understanding of the prevalence of the current different active scenarios.

Table 3

Network configurations

Scenario Active combination	Typical application	% of deployed base for Downstream BT
1a	✂	✂
2a	✂	✂
3a	✂	✂

Source: BT analysis

330. We envisage that the most likely scenarios would be from Scenario 1a to 1b, 2a to 2c and 3a to 3c. This would save respectively 2, 1 and 0 boxes. Of these, we would expect scenario 3 to have the smallest deployment. We also believe that there would be little likelihood of migration from scenario 2a to 2b (which would give a 2 box saving) as this would bring challenges of inter-working between vendors and different parties on the same link. Scenario 3a to 3b is effectively a resell situation and it is difficult to know what might be feasible here; it is possible that there could be some links like this used in conjunction with the 2c scenario.

331. Separately, in relation to scenario 1, it appears Ofcom assumes that the telecom provider's equipment has the same functionality as Openreach's equipment. In fact there are two possible scenarios within Scenario 1(a):

a. Telecom provider's equipment has the same functionality as Openreach's equipment, including the capability to monitor the fibre, and is also connected to appropriate monitoring systems. In this situation scenario 1(b) (using the telecom provider's equipment for a dark fibre alternative) may be a realistic possibility.

b. Telecom provider's equipment is used for a different purpose to Openreach's equipment. It cannot therefore readily be used for monitoring fibre (either because it does not have the correct functionality or because it is not connected to the right monitoring systems and processes). In this situation, scenario 1(b) (using the telecom provider's equipment for a dark fibre alternative) would not be feasible without investing in either new equipment with the appropriate functionality or appropriate systems and processes for monitoring (or both).

332. Again, in order to draw a conclusion about the likely benefits from cost savings, Ofcom needs to establish the prevalence of (a) and (b) above. Even if the majority of dark fibre circuits will be new-provides, Ofcom still needs to consider the costs CPs will incur in developing and rolling-out appropriate systems and processes for monitoring.

333. Ofcom appears to rely on the same assumption that it relied on in the 2016 BCMR that generally the costs of two boxes will be saved. This assumption was made in relation to a CISBO market that encompassed all bandwidths. The DFA Consultation does not set out any analysis showing that the mix of circuits at 1G and below is the same as the mix of circuits in the VHB market. In the Lower Bandwidth CISBO markets, our understanding is that there is a much higher incidence

where CPs will only save the costs of a single box. As such, we consider that the magnitude of equipment savings are likely to be reduced.

Quantum of cost savings is over-stated

334. In addition to our comments above about the need for Ofcom to take into account the prevalence of different equipment configurations and functionalities, we consider that Ofcom has overstated the quantum of cost savings. This is because (i) the estimate includes indirect and overhead costs (which are not avoided with the removal of surplus equipment); (ii) the estimate is blended over all Ethernet equipment rather than the equipment specific to Lower Bandwidth CISBO services and (iii) costs going forward will be lower than the historic costs used as the basis of the estimate. Our estimate of equipment cost savings is around ✂ of that proposed by Ofcom.

335. The analysis below demonstrates that Ofcom's proposed savings on equipment and fault and repair processes are understated.

Ofcom's use of RFS is not appropriate for this estimating cost savings

336. We have examined in more detail the savings Ofcom estimate using both top-down and bottom-up models and our analyses are set out in Annex A. Our concerns about Ofcom's reliance on using the RFS includes the following issues:

a. The Ethernet Electronics component is a blended component across all bandwidths, and so is unsuitable for estimated direct cost savings at a specific bandwidth and in this case with the added restriction of being for Lower Bandwidth CISBO services.

b. Indirect costs and overheads have been included in the estimate of cost savings however these will not be saved in a decremental situation even in the long run.

c. The component's assets are valued at historic cost yet equipment costs have reduced significantly in recent years, meaning that the cost savings have been overestimated taking a forward-looking view.

337. The value of the First Component in the DFA 1G minus calculation is c.£535 per annum.[142] This is comprised predominantly of equipment cost savings. This is a very high number given the total cost of a box and installation is of the order of ✂ in total in 2017/18. This includes installation costs. We do not consider this figure is appropriate. Our own calculation, using a top-down approach which adjusts for these issues, indicates a saving in the order of only ✂ in total for a two box circuit. A broadly similar value is derived using a bottom-up model based on the incremental costs of provision, using data from Openreach's management accounts.

338. We believe these alternative estimates are more accurate and proportionate compared to the calculations set out by Ofcom.

Buyer power

339. Ofcom also does not take into account the potential increase in the costs of equipment that would likely offset the savings. We understand that BT currently represents ✂ of ADVA sales within the UK (and ✂ globally). With this buying power we are able to secure discounts of around ✂ off the list price. We are not privy of course to the terms on which CPs acquire equipment. However, from an economic perspective, by fragmenting the market between individual CPs who will need to purchase equipment, there will be a significant change the buying power dynamic. CPs with smaller volumes would be unlikely to secure the same levels of discount.

[142] DFA Consultation, paragraph A5.15.

Taken overall Ofcom is mistaken regarding equipment savings

340. We have not had sufficient time to undertake a complete analysis of the original box savings estimate provided in the 2016 BCMR Final Statement against the current calculations, but, even on the high level analysis we have been able to carry out and the additional information we have provided in this response, it is clear that Ofcom's current assessment is not robust and overstates the potential for cost savings.

(iii) The scope for innovation

341. We consider Ofcom overestimates the scope for innovation. The innovation benefits claimed by Ofcom are not specified any more than in the 2016 BCMR Statement. Ofcom simply asserts there is "scope for innovation with Lower Bandwidth CISBO services" rather than providing specific examples which are relevant to this newly defined market.

There are no material foreseeable innovation benefits for Lower Bandwidth CISBO services

342. Contrary to the position set out in the DFA Consultation, we do not consider there are significant foreseeable innovation benefits for a DFA service for Lower Bandwidth CISBO services.

343. Ofcom's comments on innovation are highly generalised and unsupported. They have been commented on exhaustively and reviewed by stakeholders and in our view found to be lacking in substance. At paragraphs 4.36 and 437 of the DFA Consultation, Ofcom tries to make a case out for niche developments turning into something substantial. However, as far as we can see, Ofcom has failed to provide any example in the past in all the consultations and papers produced since 2014 of such a niche development turning into a substantial development such that it could justify the imposition of a highly intrusive remedy.

344. We have never said that there will be absolutely no possibility of CPs doing something different at the technical and commercial levels using DFA. However, we have however set out a large amount of evidence and argumentation on: (i) the nature of the 'thin slice' for DFA; (ii) the fact that differences in interfaces are unlikely; and (iii) whether or not DFA offers greater flexibility for CPs to differentiate their commercial models. These points, which were set out in the Second and Third Witness Statement of Mr Reid in BT's appeal of the 2016 BCMR, still apply. The DFA Consultation does not attempt to address these issues.

345. It is conceivably possible that there could be niche developments – but they will remain just that, "niche". It is not proportionate to impose a wide ranging and intrusive remedy, solely on the basis of some potential "niche" innovations. Such benefits cannot be claimed to be so significant so as to outweigh the risks.

346. Ofcom has previously noted that it would need either a compelling story of either innovation or of a desire to make substantial investment in order to strengthen the case for passive remedies:

> *"The combined effect of the lack of a compelling story of either innovation or a desire to make substantial investment led Ofcom not to undertake the significant work necessary to tackle the common cost recovery and potential rebalancing issues. The balance of that assessment could change in future, were evidence brought forward to strengthen the positive case for passive remedies in terms of their likely use in providing innovative services."* [143]

347. Ofcom has not presented any evidence let alone a compelling story of innovation or investment for DFA services in the Lower Bandwidth CISBO markets. Further, in 2013 the CAT cited Ofcom

[143] Quote from Mr Culham, Ofcom, CAT Judgement in Colt v Ofcom, November 2013, para 100.

itself arguing that BT had not hindered markets with respect to innovation and which could be delivered by active services in any case:

> *133. OFCOM's response to these claims was, in essence, that by and large BT had "kept pace" with the demands of innovation (at paragraph 8.103 of the Statement) and that business connectivity in the UK was, in Colt's own response to the June BCMR Consultation, "world class". OFCOM further claimed that active remedies could deliver similar benefits in innovation.*[144]

348. Of particular concern, we note that Ofcom simply ignores all the material lodged at the CAT including statements of fact from experienced engineers who have significant knowledge in this area.

349. We reproduce the following from the Third Witness Statement of Mr Reid:

> *"I set out in Reid 1 a factual and reasoned analysis to demonstrate the opposite, namely there is no plausible significant innovation which could be acquired from DFA. If my analysis was wrong, then it should have been easy to find a counter example. The fact that Ofcom and stakeholders who favour DFA (mainly those CPs who are not infrastructure providers on any scale), over a period of two years from the first consultation on this issue, have failed to identify any significant innovation would appear to be prima facie evidence that BT's analysis in Reid 2 is indeed correct."*[145]

350. Ofcom is inconsistent in requiring evidence of innovation possibilities in the Colt Appeal (quote of Mr Culham above) and then resorting to pure assertion itself in this Consultation. Neither Ofcom nor other industry participants CPs have offered robust evidence of plausible innovations that DFA at unrestricted bandwidths could offer, let alone DFA for Lower Bandwidth CISBO services. Mr Reid in his first Witness Statement explained that the EAD Ethernet service is a transparent bit-pipe and that technical innovation is not technically plausible at this layer. In this context, significant innovation up to 1G is extremely unlikely and no evidence has been found indicating that it would be plausible.

351. We have once again reviewed our records of Statement of Requirement ("SoR") requests over the period from 2006 to 2014, which Ofcom reviewed in Annex 18, Table A18.9, 2016 BCMR Statement. Of the twelve SoR requests identified by Ofcom that could have provided scope for innovation, two of these related to products for VHB services and are therefore out of scope. Ten would have been in scope which is a very small proportion compared to the total number of SoR requests received over that period. For those that may have been valid at 1G and below, Ofcom has provided no new evidence on their relevance today or considered if the requests were economically or technically viable.

352. We are therefore unable to find any reason why Ofcom should depart from its position in 2013 that there is a lack of a compelling story on innovation. Indeed that remains the case. There is no evidence presented in the DFA Consultation which suggests that there is significant scope for innovation such as to justify this being one of the principal benefits for introducing a DFA remedy. The notion that there is a strong case for innovation up to 1G is simply not plausible: that Ofcom may believe there are some 'niche' possibilities is certainly possible although we note that none has been identified to date.

If there are innovation benefits from DFA they will take considerable time to materialise

353. Without prejudice to our comments above, even if Ofcom is correct that there are innovation gains and that DFA does indeed have long term benefits, these will take many years to materialise. As such, given our concerns on Ofcom's market definition analysis and SMP

[144] CAT Judgement in Colt v Ofcom, November 2013.

[145] Third Witness Statement of Andy Reid in Case1260 BT v Ofcom dated 16 January 2017, para 187.

assessment set out in section 4 above, a short delay until the proper market review would be a proportionate approach to adopt given the risk of regulatory overreach. The only quantified benefit Ofcom identifies is equipment cost savings and here we are talking about the time value of incorrect.

Buyer power

354. Finally, as a purchaser on behalf of the wider industry BT is also able to influence the development of functionality from ADVA. Ofcom hypothesises that DFA will allow innovation in niche markets. However, without market scale it is questionable whether these developments would be commercially possible. It appears that both hypotheses – that niche developments are more likely or less likely – are simultaneously implausible. As a minimum we consider that DFA which fragments the market has risks as well as potential benefits in this regard, both on prices paid by CPs to what is a concentrated equipment supplier market and innovation. Ofcom ignores these risks.

355. In summary, the innovation benefits for a DFA remedy for Lower Bandwidth CISBO services are at most minimal. They do not justify the imposition of a DFA remedy, particularly when countered with the significant risks that the introduction of a DFA remedy brings.

(iv) The potential relaxation of active remedies

356. One of the benefits Ofcom expects from the introduction of a DFA remedy for Lower Bandwidth CISBO services is the potential relaxation of active remedies in the medium to long term. We consider that such a long term goal merits awaiting the conclusion of the full and robust market definition and SMP analysis which Ofcom expects to conclude by 1 April 2019.

357. At paragraph 4.60 of the DFA Consultation, Ofcom suggests that the withdrawal of regulation may lead to the ability to withdrawn the SoR process for leased line services and thus Openreach could reduce its costs and simplify its operations. The problem with this line of reasoning is that it is not evident that Openreach would in fact reduce its SoR costs. Very few SoRs have been for Lower Bandwidth CISBO services. Further, Openreach will also have to bear the costs of the SoR process for DFA.

358. Once again, Ofcom is trying to make a benefit of DFA against a largely irrelevant counterfactual; the case for DFA has to pass on its own terms.

II. RISKS AND COSTS

359. We consider that the risks and costs of the proposed dark remedy are under-stated by Ofcom and its analysis flawed. This section contains our comments on Ofcom's analysis of:

a. Fault detection and repair;

b. The impact of a DFA remedy for Lower Bandwidth CISBO markets on infrastructure investment;

c. The feasibility and costs of implementing effective contractual restrictions; and

d. The potential for regulated dark fibre to be used for VHB services.

(i) Fault detection and repair

360. This section covers fault detection and repair processes. We consider that Ofcom makes a series of errors in addition to those that were made in the 2016 BCMR. Fundamentally, any systems that CPs put in place to monitor faults on their network are no substitute for the information which feeds directly into our operations centre in Bristol. These are not trivial issues. On the contrary are extremely important. We have attempted in the limited time available to utilise such information we have reasonably to hand. However we would need longer to develop some issues such as the incentives on CPs to use an Openreach field force rather than their own resources

to fix network faults. The impact for the cost-benefit assessment is that CPs face a trade-off here. Consideration of this trade-off is absent from Ofcom's Consultation. This has a significant impact.

361. Ofcom has underestimated the costs of fault repair. The consequence of this is that Openreach engineers will have to undertake more visits to try to diagnose faults when they are in fact unrelated to the Openreach network. This does not drive efficient outcomes for Openreach or end-consumers.

The impact on costs of provision to end-users and the DFA cost-benefit assessment

362. The removal of EAD boxes carries attendant risks for all parties; the primary role of the box is a demarcation point which enables responsibility to be precisely set where networks have to interconnect. This is a standard procedure not only between different telecom companies, but frequently deployed within individual networks in any case. It is standard good engineering practice.

363. In this instance, the facility of CPs to remotely test a circuit themselves allows for faults to be quickly identified and resolved. This will disappear in the future and it is something which Ofcom has continuously failed to appreciate. To be clear, we are not arguing that faults will be impossible to fix, simply that there will be added costs and delays in doing so.

364. Ofcom's analysis in the DFA Consultation is misplaced. It has not considered that there will be significant inefficiencies arising as multiple visits will be required which could have been avoided with the current arrangements. The costs of this are not factored in into Ofcom's case for DFA.

Provision of leased lines in different configurations

365. As noted above at section 5.B.I(ii), Ofcom now recognises that leased lines can be configured in different ways. Ofcom presents various potential configurations at Figures 4.1 and 4.2. In addition to our comments in relation to cost savings, the various permutations of circuits also has implications for fault management.

366. The scenarios clearly illustrate that for cases 2c and 3c, the CP will have to provide additional equipment when the Openreach boxes are removed. Further, in each of scenarios 2a and 3a, the provider would not have needed to provide a field force to install, and repair equipment as it did not have any equipment on the customer premises. The provider could in these circumstances have relied upon Openreach to carry out these activities.

367. For both 2c and 3c cases, the provider will now need to employ a field force to carry out both activities, in addition to the Openreach field force. At paragraph 4.73 of the DFA Consultation, Ofcom notes that it does not expect fault detection and repair for dark fibre to lead to significant additional costs overall. However, it is clear that Ofcom has not taken into account who actually needs to do what under DFA compared with the current situation under active products.

368. In this context we have serious concerns regarding Ofcom's Question 4.2 – *'Do you have evidence on the current relative prevalence of each scenario of active equipment configurations as shown in Figures 4.1 and Figure 4.2? Please set out your reasons and supporting evidence for your response'.*

369. This Question is highly problematic as framed:

    a. It is not clear to stakeholders that they should limit the question to Lower Bandwidth CISBO services.

b. It fails to ask the pertinent question of which scenarios might be expected to grow or decline in the future regardless of what the historical position has been, given that future equipment savings are the relevant issue according to Ofcom.[146]

c. It does not allow stakeholders to identify if the scenarios are being used in different market sectors and where differential remedies might be appropriate.

d. It does not enquire as to which are the dark fibre scenarios that they plan to adopt and how this will affect equipment costs and installation, fault and repair processes all of which also will have costs.

Whether providers will have comparable capabilities to detect, locate and repair faults

370. At paragraph 4.73 of the DFA Consultation, Ofcom states that CPs have comparable capabilities to detect, locate and repair faults. However, this ignores a basic point. Even if the CPs had the same network elements and network management systems as Openreach, they would not be able to carry out the functions that the Openreach network elements and systems currently undertake. They cannot delineate and monitor the Openreach demarcation points from the Openreach side and thus provide remote diagnostics which identify on which side of the demarcation a fault resides, simply because they cannot be placed on the Openreach side of the demarcation.

371. For example, detection of absence of light provides no positional information to a remote management system that would identify location or cause or which side of a passive boundary the fault has occurred. As such the systems will be "less effective" as even if they improve over time, they cannot always localise a fault to their own or Openreach's network remotely.

372. By removing Openreach's ability to monitor its side of the service, Ofcom has introduced an intrinsic limitation that means that dark fibre fault systems will be less capable of localising faults compared to cases which an active solution would have resolved remotely. BT's witness evidence at the CAT described that once dark fibre is deployed there are several types of fault which will not be distinguishable from one another, or where it will not be distinguishable on which infrastructure the fault occurred unless engineers are deployed.[147]

373. This limitation introduces the problem of which field force (that of the provider or that of Openreach) the CP would decide to dispatch when the cause and location of the fault are not clear. This results in an intrinsic economic inefficiency in terms of the number of visits. Our analysis is set out in detail at Annex B and further below. Ofcom has not considered the impact of this, not just in terms of visit numbers, but also in terms of delays to the correction of faults due to the indeterminism introduced by DFA itself.

374. The introduction of a dark fibre patch panel illustrates this problem which introduces an unavoidable fixed cost for CPs to operate a field force. The CP patch cords used to connect to the Openreach Dark Fibre service will not be able to isolated and tested remotely by the CP. So if these become faulty or damaged in any way, the CP will not be able to distinguish remotely between a fault on the patch cords or the main DFA service. This is just one of a number of fault scenarios that Ofcom has not considered.

375. At paragraph 4.33 of the DFA Consultation, Ofcom suggests that the overall impact of dark fibre in this matter could actually be positive. Ofcom provides no evidence for this and, given the discussion above, there is every reason to expect the opposite.

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[146] Of course it may not be possible for CPs to do this forecast given all the uncertainties that the Consultation has raised in any case.

[147] Mr Mcguire's Second Witness Statement in BT's appeal of the 2016 BCMR (part of BT's Reply to Ofcom's Defence dated 16th January 2017), in particular paras 69-72, 77-80, and 96-101.

Fault detection and repair incentives

376. At paragraph 4.73 of the DFA Consultation, Ofcom describes the incentives for providers to fix faults quickly and that high callout charges can be used to act as a disincentive where faults are incorrectly diagnosed. As discussed above, Ofcom has not considered the impact of the limitations on localizing faults that a dark fibre solution imposes (effectively removing an ability to remotely fault a number of conditions) and consequently what strategy a provider will adopt when deciding which field force needs to be dispatched when the cause and location of the fault are unclear.

377. Annex B shows that there are likely circumstances where there is an incentive to dispatch Openreach engineers first, regardless of where fault is, despite the imposition of penalty charges and this is explained below.

378. At paragraph 4.70 of the DFA Consultation, Ofcom asserts that it does not believe that the number of site visits will be materially higher for dark fibre than for active services. However, no evidence is provided to support this statement. This is a factual matter, not one on which Ofcom can rely on its regulatory judgment and Ofcom needs to ensure it collects robust evidence if it continues to maintain this position. In this context we note that Ofcom's assertion in the 2016 BCMR that Openreach nearly always dispatch an engineer in response to faults raised by providers is incorrect. In fact, Openreach does not dispatch field engineers for every fault, or nearly every fault that is reported.

379. Some statistics illustrate this point, based on the monthly Ethernet EAD faults reported to Openreach for the period March 2014 and February 2015 and analysis of clear codes on Openreach systems:

    a. ✂ of all faults reported by CPs were identified by the Openreach Operations Centre using management systems to carry out remote diagnostics as customer faults and no Openreach engineer was dispatched.

    b. Of the ✂ where Openreach dispatched engineers:

        i. ✂ of visits were to fix fibre faults in the Openreach domain.

        ii. ✂ of visits were in response to customer requests to dispatch an Openreach engineer even though Openreach systems had already identified there was no fault on the Openreach side and were classified as no fault found.

        iii. ✂ of visits were for faults related to Openreach NTEs.

380. In the time available we have not been able to update this analysis with more recent data but we would be happy to do so. In the case of dark fibre, however, Openreach will always dispatch an engineer in response to a CP provider reported fault so the onus on reducing unnecessary Openreach call outs now lies entirely with the CP.

381. Whilst removing the Openreach NTE might improve reliability (a minority of ✂ reported faults are actually the Openreach NTEs i.e. ✂) and this might be thought to reduce the number of site visits (as, in theory, ✂ of faults can be eliminated at source from the Openreach domain). However, if CPs replace the boxes then these will simply materialise again as new CP domain faults. The remaining faults in the Openreach domain are for dark fibre alone and would be ✂ roughly ✂ .

382. Ofcom has failed to recognise that by removing the NTE they have introduced the inability to determine where some faults reside and therefore which is the appropriate engineer to dispatch. Fundamentally, Ofcom has not investigated the trade-off between increased availability of engineers and fewer site visits to repair NTEs for active services versus the inability to determine

the appropriate dispatch to minimise unnecessary visits (followed by subsequent visits by the correct party) and the total time to repair for dark fibre.

383. Linked with this trade-off is the decision as to which party a provider dispatches first and here it is the cost of unnecessary visits and penalty payments against the cost of an appropriately sized and geographically distributed field force to adopt a CP 'fix first' strategy. This trade-off depends also on the total frequency of faults.

384. In the 2016 BCMR, Ofcom assumed that "right when tested" ("RWT") and "fault not found" ("FNF2) faults will be about 20% for DFA services of what they are on active services. Ofcom considered this suggestion reasonable given "the increased CP diagnosis" (2016 Final Statement A23.79). Whilst the achievement of such an improvement is debatable, it is instructive to consider what this would mean using the figures for March 2014-February 2015 cited above.

385. Assuming the same number of fibre faults, but no Openreach NTE faults (as they are no longer present), and the ✂ is eliminated by whatever means - and no engineer is dispatched - then in terms of Openreach dispatches:

- ✂ of Openreach dispatches would be to fix fibre faults (✂).
- ✂ of Openreach dispatches would find no problem as it would be a customer fault (✂).

386. This is a ✂ inefficient use of resources (or around one in three site visits) and there is nothing that can be done by Ofcom to ameliorate this. This alone would fully account for Ofcom's estimate of ✂ of current RWT/FNFs persisting into a DFA world (✂). We believe even if the CPs make substantial investment in their own monitoring, it is unrealistic to assume that all of the ✂ will be successfully handled by CPs and none will result in a fault report to Openreach.

387. If only ✂ of the ✂ still result in a fault report to Openreach, then Openreach will have exactly the same level of site visits as they currently do. In short, is seems mostly that Openreach costs will be at best unchanged, whilst the CP costs will be significantly increased.

388. Anything above the ✂ of the ✂ (no dispatch needed), would then mean an increase in visits for Openreach compared to current existing active products in contradiction to what Ofcom at paragraph 4.71 of the DFA Consultation states and something which we have raised with Ofcom in the past. As a result, the level of intrinsic and unavoidable inefficiency in Openreach resources will be directly dependent on the capabilities of the CPs and the strategies they choose to adopt. There will be costs here which we should be entitled to recover in full.

389. Ofcom therefore fails to appreciate that Fault Frequency and Repair will be more complex under DFA with some deterioration in service standards to end users.

390. Finally, we also do not accept the value that Ofcom applies for the additional engineering costs for example of around £113 per circuit. This seems implausible. It would be the cost of a call out for a typical domestic appliance in working hours, not a commercial charge for a 24/7 facility throughout the entire year.

Trade-offs between equipment and service standards

391. As set out above, for CPs moving to dark fibre configurations 2c or 3c set out in Figure 4.2 of the DFA Consultation, a field force is required both to deploy the network elements and to maintain them, with development of appropriate management systems. In other words, there will be significant additional costs. We are aware that at least one large CP originally planned to offer services based on Scenario 2c to allow delineation of its services to permit it to offer an SLA and provide monitoring.

392. There is a further trade-off for CPs, namely who should undertake the repair activity. With DFA it is no longer possible to remotely demark faults between the CP (or even the end customer) and Openreach and any fault observed by the CP might be due to a failure in the CP's domain or Openreach's domain, and it is not realistic to determine responsibility without a site visit.

393. So even if the CP were to deploy monitoring functionality exactly equivalent to the EAD boxes with the associated additional costs, these remote diagnostics cannot isolate a fault between the CP's responsibility and Openreach's responsibility. In order to use DFA, a CP is faced with a new set of options and trade-offs in setting their maintenance and fault repair processes which are over and above those when the CP service is based on EAD.

394. First, the CP would need to decide whether the total cost of repair was more important than the repair time, or vice versa. For example, the CP could decide that repair cost is more important and decide to either (i) send their own engineer and await their report before reporting any fault to Openreach, or (ii) immediately report the fault to Openreach and await the report from Openreach before dispatching their own engineer. Annex B explores the cost trade-offs for the CP in making the decision whether to dispatch their own engineer first or to report the fault to Openreach first. Clearly in either case, this scenario risks increased delay in repairing the fault if the initial decision is wrong.

395. Alternatively, there may well be circuits where the CP has SLGs with their retail customer which would make repair time paramount. In these circumstances, faced with a fault between their remote monitoring boxes (assuming they have them) in order to minimise the repair time, the CP has little option other than to send out their own engineer and also report a fault to Openreach at the same time. This results in Openreach also dispatching an engineering to site and the CP must bear the cost of two engineers being sent to site.

396. So even if the CP has gone to the expense of: (a) fully replicating Openreach's remote monitoring including the cost of the boxes; (b) the remote monitoring centre (akin to Bristol); and (c) has the equivalent field engineering force (which is not costed by Ofcom) - there are still additional operational costs associated with the DFA associated with the demarcation point which cannot be remotely monitored. The scale of the additional costs will be either in the form of increased costs of site visits, or increased repair times, or mostly likely, both.

(ii) Impact on infrastructure competition and incentives to invest

397. We consider that Ofcom wrongly dismisses the impact on investment by rivals. If there is take-up of dark fibre (as claimed in the consultation) and if rival infrastructure providers provide connectivity which is a substitute for dark fibre applied in the Lower Bandwidth CISBO market – which Ofcom has said, in evidence to the CMA, is the case for CityFibre – then an impact must be expected. It has not, however, been investigated by Ofcom.

Ofcom only partially addresses concerns on infrastructure and incentives to invest

398. Infrastructure CPs who, even if in principle, were not affected by the new proposal to launch DFA only for Lower Bandwidth CISBO services, would still face uncertainty regarding incentives to build. This is because they will be unsure if it is an enduring restriction and even if it is, whether there is any chance that it can be enforced in practice.

399. As it stands, we perceive a fundamental contradiction here from what Ofcom is now arguing to what it stated one year ago. Ofcom's Chief Economist, Mr Peter Culham at the CMA stated that: (a) most of CityFibre circuits were at or below 1G; (b) would not be affected by original DFA proposals which was to protect this part of the market and focus the benefits on VHB by utilising the EAD 1G minus formula. His text is reproduced below.

> *'104. Ofcom carefully assessed the impact of the dark fibre remedy on CityFibre's business (as well as the businesses of other rival infrastructure operators). Ofcom concluded that the dark fibre remedy would not materially affect the prices of and demand for the*

connectivity used by the great majority of CityFibre's customers, since they operate in sectors which currently consume bandwidths of 1Gbit/s and below. Given this, its impact on CityFibre's business would be limited.' (emphasis added)

400. If the current proposal is only different from the previous one in excluding VHB services, then it begs the question as to why the impact on Lower Bandwidth CISBO should be any different. If there is no material impact on CityFibre it can only mean one (or both) of two things. First, that Ofcom never expected there to be much impact in the short and long term if the price was kept at the EAD 1G minus formula. The second possibility is that Ofcom does not see BT and CityFibre as competitors. As the evidence given by CityFibre at the CMA indicates, that is certainly not how CityFibre sees the marketplace.

401. Our position on this as a matter of principle is quite distinct from concerns we have raised over the calibration of the active and passive differential which we set out below.

(iii) Risk that contractual restrictions would be ineffective

402. The main argument which Ofcom uses to mitigate any risks that might arise as a result of the introduction of a DFA Remedy for Lower Bandwidth CISBO services is that BT can effectively enforce a contractual restriction limiting the use of the products in the Lower Bandwidth CISBO market. Ofcom wrongly presumes that BT can effectively enforce a limitation of the dark fibre remedy to the Lower Bandwidth CISBO market through contractual restriction. In fact, such a restriction (on which no evidence has been gathered and consulted on) would take time to negotiate, would be susceptible to dispute, and would be difficult to enforce effectively without significant investment in systems development, audit processes and suitably trained staff which will add significantly to up-front and ongoing implementation costs. We set out our concerns below.

Regulatory consistency

403. As noted above at paragraph 290, in order for a contractual restriction to be effective, there needs to be both the ability to monitor whether customers are complying with the restriction and, if as a result of that monitoring it becomes apparent that the customer is in breach, to enforce that restriction.

404. It was previously accepted by Ofcom that there is no realistic prospect of Openreach being able to monitor dark fibre usage with profound economic consequence. This issue was very extensively discussed in the 2013 Colt Appeal and a quick search of the word 'monitor' across the transcripts includes the following references.

- Day 1. Page 44: 14-19; 32-34. Page 46: 23-29.
- Day 2. Page 28: 22. Page 39: 1-29. Page 40: 26-33. Page 41: 1-20. Page 42: 20-23.
- Day 4. Page 17: 6. Page 18: 17; 25-30. Page 28: 28-24. Page 37: 22-32. Page 39: 2-5. Page 50: 4. Page 52: 26. Page 53: 33. Page 72: 8-11.

405. Inspection of these and other passages makes clear that Ofcom and BT were wholly aligned that: (a) the practicality of monitoring was a major not a minor issue and that nobody could see a way round it; and (b) many of the pricing solutions being advocated by Colt depended on the ability to control usage of the passive input. These points were reflected in the subsequent Consultations in the 2014 BCMR market review documents as shown below.

406. In particular, the issue of contractually agreed limitations to the usage of passives including DFA issue was very extensively discussed in the 2013 Colt Appeal as it was speculatively proposed by Dr Lilico, expert witness for Colt. It is also significant to note that the context of the point was a general agreement between the parties that a non-uniform recovery of common costs was

economically efficient.[148] The point in dispute in the Colt case was therefore whether non-uniform recovery of common costs was commercially viable for passive access products including DFA.

407. The possibility of a contractual solution essentially identical to that proposed in the current consultation was rightly and robustly dismissed by Ofcom at the time. Mr Peter Culham said in his second witness statement the following (emphasis added).

> *8.1. First, Dr. Lilico suggests that there could be a contractual agreement between the provider and user of passive access, which specified the use to which the passive access could be put. He suggests that such contractual arrangements, combined with the possibility of punitive and deterrent damages, could be sufficient to ensure that passive access seekers had sufficient incentives to uphold their contractual obligations. He also suggests that a passive access provider such as BT, that sought to maintain a bandwidth gradient for active services, would have strong incentives to monitor usage and to report any contract violations.*
>
> *8.2 I have a number of observations on this suggestion. First, it is not clear how BT would be able to monitor the usage of a passive remedy. It would not have any means of discovering which services were being provided through fibres that were put in its duct or what services were being provided by dark fibre that it made available to others. All of the equipment that would be capable of providing the relevant information would be owned by the other operators.*
>
> *8.3 One solution to this problem would be that BT could be granted the right to monitor in detail the services provided by its competitors. It is worth noting that, in order for BT to establish whether contractual conditions were being breached, it would be necessary for there to be comprehensive system for logging the use at many points in time. This would be a costly process. It would also create an undesirable situation, in which BT was able to gain access to the commercially sensitive data of its competitors.*
>
> *8.4. Second, one of the main advantages of passive remedies is that they allow the user to follow the business model of its own choosing to a greater extent than may be permitted through active remedies. If the use of the passive remedy is limited to the use specified in the contract, it is not clear that these benefits, and in particular the benefits of innovation that are held to be associated with the passive remedies, would be likely to arise in practice.*
>
> *8.5 Third, the scope for disagreement over what was permitted in the contract would be very significant, unless the contract nailed down the precise detail of what was and was not permitted. This would stifle innovation and lead to costly contractual disputes and probably litigation.*
>
> *8.6 Finally, the main problem with this suggestion is that it envisages variations only in use but not by geography or the intensity of usage in the relevant part of the network. The proposed approach could be modified to deal with this point, but the likelihood of agreement of a contract on that basis would be extremely low.*
>
> *8.7 I also understand from Ofcom's legal team that a contractual provision for "punitive and deterrent damages" may give rise to significant legal difficulties.*

408. From this, it is clear that at the time of the Colt appeal Ofcom doubted the technical viability of any solution to capacity monitoring, and even if it were technically possible, it would be prohibitively expensive, would result is damaging legal disputes, and any contract deterrent such as terminating service would be legally problematic.

[148] The expert report of Mr Peter Culham discusses this at length at paragraphs 24-27.

409. Moreover, this was a significant point on which the case rested and the Judgment states the following where paragraph 167 is key:

> *167. Before the Tribunal counsel for OFCOM was even more emphatic.*[149] *OFCOM had indeed taken the view that passive access would have to be priced at a uniform rate, and that this would in turn limit BT's ability to price its downstream products in a way that would ensure recovery of its common costs. This was because independents to the consultation had told OFCOM not only that this was likely, but that it was desirable. Respondents also told OFCOM that the use of passive remedies could not easily be limited or monitored. This would inevitably disrupt BT's ability to maintain its existing common cost recovery arrangements at the active level. New entrants would use passive access to cherry pick customers downstream, undercutting BT's prices on which it relied to recover that element of cost. The result would be new entry focused on urban centres, major conurbations or areas and high bandwidth customers. Such entry would not be efficient or beneficial in the round.*

410. In the Colt appeal, it is clear that "Ofcom had taken the view that passive access would have to be priced as a uniform rate" and that contractual arrangements to limit or monitor usage were either not possible or impractical and in turn this would affect common cost recovery.

411. The issue of whether common cost recovery is at some risk is not in our view necessarily the only issue of concern in all circumstances. Rather the issue that is relevant here is that monitoring of usage was ruled out as expensive and likely unenforceable through contract and where 'significant legal difficulties were envisaged'. Our position on this therefore does not rest on the merits of whether uniform pricing is desirable or not.

412. As far as we are aware, this was the last time a commercial solution (contracting) to differential pricing of DFA was discussed publically by Ofcom.[150] It is therefore especially surprising to find that this exact same solution is now being proposed by Ofcom, particularly as no evidence is advanced as to how the very difficulties identified by Ofcom itself should now be solved. Indeed, we are clear that there is nothing material which has changed between 2013 and now, either technically or commercially which would alter the correctness of Ofcom's view at the time.

413. If, therefore, it is indeed the case that contractual arrangements are not possible or practicable, the DFA proposal put forward in this current consultation will result in the very uniform pricing which was generally agreed in the Colt appeal to be economically inefficient and where Ofcom has not opined as to whether BT has SMP in any case for VHB services.

414. Once again, in this current consultation Ofcom advances no evidence which might indicate why its previously clearly stated position is no longer appropriate. Indeed, the proposal of contractual arrangements to price differentiate bandwidth might suggest that Ofcom does still hold this view so that it does not disrupt efficient pricing in the VHB market. However, this is not clear in the Consultation, and we suspect that in the absence of any clear statement on the efficiency or otherwise of uniform pricing, some CPs will understand this current proposal as a simple 'foot in the door' on the way to a universal DFA remedy across all bandwidths and which as we explained above, puts the basis of the Consultation on a very unsatisfactory foundation.

415. Finally, Mr Culham was clear that any move to passive access would need to be justified by genuine innovation and not by a simple desire to unpick non-uniform pricing. He did not support the scenario advanced by Colt at the time as he says the following:

> *56. While both the Appellant and Dr Lilico emphasized the potential for passive access to provide a better environment for promoting innovation, the actual proposals that the Appellant set out for using passive access, were it to be introduced, appeared not to*

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[149] Transcript of hearing day one, page 43.

[150] The Colt appeal included DPA as well as DFA.

involve the creation of new products or services or innovation of any type. The [CONF] Investment Plan set out by Colt is essentially based on using passive access where Colt appears to expect that this would lead it to incur lower costs then it would incur by using BT's active products.

57. The main evidence submitted by the Interveners, concerning how they would actually propose to use passive remedies, were they made available is in [CONF] evidence, and in the case study that it submitted in response to Ofcom's consultation. This study shows a calculation of cost savings relative to the use of BT's active products. The main focus of [CONF] plan is on the potential cost savings available to [CONF] in the provision of high capacity links to base stations, by using passive rather than active remedies.

416. Even with the confidentially redactions, it is clear that the situation then is no different to the situation today. DFA was being advocated by some CPs only as a way of reducing input costs by artificially altering the efficient system of non-uniform pricing for one specific sector of the market and in that case it was backhaul from base stations. The current position is no different, as can be judged from the CP responses to the Call for Inputs and which was reported by Ofcom in the November 2014 Preliminary Consultation on passive services.

417. In summary, the complexity of proposing DFA Lower Bandwidth CISBO services was the subject of the Colt appeal and Ofcom advanced detailed economic and practical evidence as to why this is likely to be impractical and/or economically inefficient. It would require the introduction of the very monitoring and contractual arrangements which are now being proposed as feasible in the current Consultation. Critically, there was also a fundamental need to show compelling likelihood of innovation.

The role of Openreach engineers

418. At paragraph 3.21 of the DFA Consultation, Ofcom suggests that if a CP used DFA for VHB services, then it is likely to come to Openreach's attention. This is implausible for a large number of reasons.

419. In this specific instance, Ofcom imagines that as Openreach has access to both ends of a circuit for maintenance purposes, in many cases it would be apparent that equipment was capable of supporting higher bit rates.

420. This fails to appreciate the very many practical issues involved including the following.

421. First, Openreach fibre engineers do not have the time or knowledge to do this inspection:

a. Openreach would have no responsibility beyond the patch panel on a dark fibre service and as such tracing client fibre patch cords or cables through a customer rack (which may have large numbers of fibre connections and intermediate points of flexibility) is not a simple task and can be time consuming. Such activities would also lead to the risk of interfering with live circuits by introducing faults on the customer side. Indeed the relevant equipment may be located in a completely different part of the BT exchange or customer site to which the Openreach engineer may not even have access.

b. Openreach field engineers are dispatched to repair faults and to do so against the clock. As such they would not have time to inspect customer equipment.

c. It is unrealistic to expect a fibre repair engineer to recognise various forms of electronic equipment, across a wide variety of vendors and applications and infer from that the technical capabilities, or indeed what they are actually being used for. It is not realistic to expect them to be able to identify card types from manufacturers, as they are not trained in that area. Evidence of a 10G port does not mean that it is not being used for a different circuit from a different provider for example in London. They are there to identify and fix fibre faults and nothing more.

d. Customer equipment may have a mix of interface types that include 100M, 1G and higher than 1G bandwidth rates and as such it cannot be inferred that any particular one is related to the circuit in question by a simple visual inspection. Since customers can legitimately have various rates on their equipment that may be for different access or backhaul applications and be used to consume other products this is impractical.

422. Second, visual inspection will often be quite inadequate anyway:

a. Where an equipment has no capability to support rates above 1G it is still possible for several wavelengths from interfaces on one or more pieces of equipment to be multiplexed together passively such that several 1G wavelengths could be on the Openreach fibre. This would be very difficult, if not impossible, to determine from a simple visual inspection in many cases.

b. It is not possible to tell what bit rate an optical transmitter/receiver is running at when in use, other than by removing it and in the process potentially impacting other services by disturbing fibres associated with these services.

c. There will be no evidence of bandwidth consumed at the demarcation point (a patch panel) that the circuit is using a bandwidth at or below 1G. The Openreach engineer would need to trace the fibre through a rack to check if it is connected to a higher rate source. In doing so the Openreach engineer would be touching customer equipment or fibres and therefore risks interrupting service to the customer.

423. Third, there will be cost and service issues arising from the Openreach engineer attempting to police bandwidth and other contractual issues:

a. There will be an extra cost of checking records if that is the method chosen.

b. The CP is not always the end customer so there will be issues of enforcing the contract with the end user, for example if the CP resells dark fibre to a Systems Integrator.

424. Ofcom's speculation here simply raises a host of difficult operational and contractual issues none of which are explained in the Consultation. We are not at all persuaded of this route and regard it as both untenable and unworkable in practice. Anyone with knowledge of telecom operations would be able to verify this quickly; even simply measuring optical power or determining if a fibre is lit would not be sufficient to do what Ofcom imagines.

425. There are several ways in which accurate monitoring could probably be done and we explore some of these in more detail below. Even putting the cost issue to one side, it is critical to appreciate that this cannot be done without some likely degradation to service across DFA itself – one of the reasons which Ofcom imagines will be the benefit of DFA to facilitate innovation.

426. In summary, Ofcom is completely mistaken in these matters. We discuss below the implications of Openreach being forced to install monitoring equipment to ensure that the restriction to the Lower Bandwidth CISBO market is actually complied with. We also cite and quote below from the 2013 Colt appeal where this issue was discussed at considerable length. We have set out above the multitude of reasons why Openreach cannot be aware of CP use of DFA from visual inspection. Of course the existing EAD equipment provides both monitoring and a policing capability. Ofcom believes that BT could put in place a contractual clause against customers using DFA for VHB purposes which indicates to us that it is accepted that there needs to be some means of policing.

427. We have not had time to examine this matter in detail given the unexpected and previously unadvertised decision of Ofcom to try to go down this route. However, preliminary options include the following, each of which would require some design activity and systems development:

a. Option 1: Using an 'optical splitter' to tap off a fraction of the optical signal on the fibre and feeding it into a single EAD box as a monitoring point. The limitation of this is that it only

works for optical signals for which the EAD is built (and there would now be an incentive to use incompatible signals to avoid monitoring). There will not be much difference in cost compared to an existing EAD service.

b. Option 2: Using an 'optical splitter' to tap off a fraction of the optical signal on the fibre so that test equipment could be attached as required. The test equipment could check for example - the number of wavelengths present; the bit rate in use; and the modulation rate. However, such a test would only monitor the signal at the time an engineer is present to carry out the test. A possible variant might be to place the splitters in BT's local exchanges. This would make carrying out an inspection test easier, however, it would be considerably more difficult to contractually verify that the actual fibre strand tested is in fact the specific fibre of a customer service. It is also possible that installing such unterminated splitters might compromise national security ratings for the service.[151]

c. Option 3: Introduce a 'media converter' which converts a signal from in-station optical fibre or Ethernet cabling to longer distance optical signals and which could be reasonably independent of the both the bit rate and the specific signal protocol. This would then act as a bandwidth throttle and in principle can be remotely monitored if necessary and thus giving an indication as to whether it was still present and/or working. Overall much of the functionality of an EAD box would be required and again there will not be much difference in cost compared to an existing EAD service.

d. Option 4: Introducing some passive mechanisms that limit the capability of the optical signal to support higher speeds. This is technically much more speculative and represents ideas from experts in optical technology in BT Research and Innovation.

428. Options 1 and 2 introduce monitoring, which is not consistent with the definition of dark fibre. Monitoring in this way will also impact the optical 'budgets' available and hence the available distances that could be supported. There is also the need to agree the location of these monitoring points and appropriate access and if necessary power supply.

429. Option 3 acts as both a monitoring point and a policer and does not require a splitter, but would by definition be an active product as it is in-line with the fibre.

430. Option 4 is counter to the whole thrust of research and development of fibre technologies for over 40 years and while our experts might speculate on the technical plausibility, we are not aware of any commercially available solution that would provide this.

431. In summary, none of these options implies there is an easy solution at all to monitoring bandwidth and they all fail some key element of what DFA is supposed to bring which is a transparent and less costly network service.

CPs may face subsequent additional costs from the restriction

432. The DFA product as now defined has built in obsolescence and if a CP wants to go above 1G which was initially supplied from consuming DFA then they face the following issues.

433. First, CPs will not be able to easily leverage any investment they have made in systems that are coupled to the use of DFA if, at a higher rate they have to then use an active product from Openreach. The migration process will be instead be cease and new provide and this will require new systems development.

434. Second, any competitive advantage that has been introduced by means of innovation would,

[151] CESG is the UK government's national technical authority for information assurance. It protects the UK by providing policy and assistance on the security of communications and electronic data, in partnership with industry and academia.

based on Ofcom's bit rate limitation, subsequently be lost when migrating to an active product at a higher rate supplied by Openreach as otherwise the innovation would have been agnostic as to whether it was from a passive or active service.[152]

435. Third, the CP would then have to invest on the basis that they believed that dark fibre bandwidth restrictions would be lifted or that there was sufficient volume at or below 1G to invest, balanced against there being a reversible decision based on later market analysis.

Ability to enforce a bandwidth restriction

436. There will be a range of new costs not previously taken into account by Ofcom if BT has to enforce the bandwidth restriction through monitoring equipment. Ofcom does not appear to appreciate that the restriction to Lower Bandwidth CISBO services means that the product is no longer DFA as was previously envisaged and that this has major and not minor consequences.

437. We reproduce below an extract from the RO for DFA as originally envisaged with highlighting that the fibre will be unmonitored and unlit:

> *"2.2 The Service*
>
> *Our Dark Fibre Access service offers a dedicated, unmonitored, unlit optical path over an end to end radial distance of up to 45km and a maximum route distance of 86km between two sites. This will be a passive service and no Openreach active, electronic equipment will be provided to light the fibre provided, hence the reference to 'dark fibre' in the product title"*

438. There are additional matters including the issue of dual rather than single fibre requirements where the Consultation demonstrates fundamental errors in technical appreciation, as discussed above. We also provide an explanation of why Ofcom is wrong in assuming that Openreach field engineers would be able to determine what the CP would be doing with DFA even if they happened to be present in the relevant area of the exchange or customer premises in any case.

439. A very simple and somewhat artificial parallel is offered to give an intuitive explanation as to why the monitoring issue is so critical. Imagine that the original DFA product as set out in the RO was an unrestricted travel pass for trains and buses in a city. The idea of the pass is that the customer can make any journey at any time and make as many journeys as they please.

440. However, later on there a decision is made to limit the number of journeys that can allowed by the ticket to no more than ten per week, analogous to the Ofcom proposal to limit DFA to Lower Bandwidth CISBO services. The Ofcom proposal for managing this new condition is equivalent to printing on the ticket "may be used for no more than ten journeys per week" and without adding any monitoring of the usage of the ticket.

441. It would be likely that at least some customers would be fully aware of the complete lack of monitoring and simply abuse the system. Moreover, even if some customers were well intentioned, it would not always practical for the customers to control their usage in exact conformance with the new journey limitation; customers could easily make genuine mistakes. As a result, without any monitoring it would be highly unlikely to have general compliance to the new condition for both benign and malign reasons.

442. If a customer is accused of making an eleventh journey in a week, proving a material breach of contract would not be easy. Not only would it be necessary, without any monitoring, to prove the excessive journeys had taken place, it would also be necessary to prove the intent to defraud the system. Given the wide range of plausible genuine mistakes that could be made, establishing the

[152] We note below that in the Colt Appeal Ofcom specifically argued that equivalent innovation could be offered on active services anyway.

intent is likely to be legally challenging. Indeed, it is likely that the only ones who would be successfully penalised would be those with good intentions who made some obvious error. Those with a determined intent to abuse the system would be much better at covering their tracks and would be unlikely to be caught.

443. In the case of Ofcom's proposal for the restricted use of DFA, as with the analogy of the restricted travel pass, there are many plausible ways in which an honest mistake may be made such as: incorrectly patching fibres on a CP's fibre frame; misconfiguration of multirate SFPs capable of more than 1G; and misinterpreting test signals as being optical signals of greater than 1Gb. All of these inevitably make enforcing the restriction very challenging indeed.

444. In the case of the restricted travel pass, the simple and cost effective solution is for the train and bus companies to have a monitoring system that records the number of journeys made each week and then refusing the eleventh and subsequent journeys. In the case of the restricted use of DFA to Lower Bandwidth CISBO services, the simple and cost effective solution is for Openreach to have a monitoring box on the end of the fibre, and the simplest and most cost effective box is the current 1G EAD box.

445. It is evident that Openreach cannot monitor without extensive equipment which will negate the supposed cost benefits of DFA. In practice if Openreach did discover that CPs were contravening the restriction, it would require an engineering visit to remove a fibre patch panel as there is no capability of doing this remotely and ensure that the fibre is not being used.

446. We consider that it is highly unlikely that BT could enforce punitive damages or compensation for such breach of contract as a fair contract term. There are no similar examples of Openreach being able to cease service for a breach of this kind.

447. This in turn could lead Ofcom into extensive dispute resolution issues and was one reason why Ofcom was very reluctant to go down the passives route in the previous BCMR as discussed below.

Openreach's PIA product

448. At paragraph 3.22 of the DFA Consultation, Ofcom notes that in the context of another passive remedy (PIA, previously imposed in the WLA markets), BT was able to adopt a simple, contractual solution to reflect the scope of the PIA remedy. We do not consider that the two restrictions are comparable. The PIA restriction on usage is a restriction as to network design (that PIA can only be used for the deployment of NGA network) as opposed to bandwidth.

449. First, the PIA order is manually reviewed and checked against a list of use cases. Openreach will have a much clearer idea of the commercial plans involved and be able to identify clear breaches of the contractual restriction (for example an exchange to exchange duct route would clearly not be for residential broadband). Further, it is generally possible to tell whether PIA is being used as an NGA deployment: it is physically apparent.[153] This is quite different to the situation of DFA where first of all there is no manual review and validation of an order upfront, and where such a review would in any case be meaningless. The network design of a dark fibre circuit for 1G use would be no different to the design of a circuit for 10G use. Further, on dark fibre the allocated bandwidth can be altered very quickly without Openreach being involved or aware of what is going on (e.g. the same equipment can be used to provide bandwidths of 1G or of 10G and, as noted above, Openreach would not have knowledge of all the types of equipment which could be used, or of what bandwidths they support).

450. Second, the underlying incentives for PIA are quite different as they are based around possibilities of aggregation; it would not be commercially effective to use PIA for leased line

[153] Notwithstanding these points, Openreach has concerns that the current contractual restriction is not fully effective.

services unless there was aggregation of demand on a route. In turn, this means that if a CP wishes to use PIA between for example a BT exchange or a data centre to an aggregation point such as a street cabinet for FTTC or along a street where there are businesses. Then likely Openreach will have some, albeit limited, knowledge of what is being done and there is a possibility of being able to police this to a degree. There will however be ambiguities and grey areas in any case. To the contrary given that the network routing for active services and DFA will be identical, there will be no basis for Openreach to have awareness of what the CP is actually doing at both ends.

Prior regulatory support for contractual restrictions

451. As far as we can tell and on the basis of a quick review of relevant documents, it appears that Ofcom never considered this new solution of imposing bandwidth usage restrictions and only having contractual mechanisms to monitor this as a serious possibility in any of its previous Consultations or Statements.

452. Ofcom's November 2014 Preliminary Consultation on passive remedies includes the following text at paragraph 6.17:

Interactions between product (and geographic) markets – in the same geographic area, there may be some product markets which are effectively competitive and some where a CP is found to have SMP. Any mandated provision of passive access would apply only in those markets where there is SMP. 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).

453. Ofcom did not however ask stakeholders in that Consultation anything about monitoring feasibility – no such Question was given in Annex 4 of that document. It never occurred to anyone that this was a serious possibility.

454. In fact, the contrary impression is given when Ofcom looks at the sort of pricing solution suggested by Colt's Expert of applying usage-based pricing (see in particular the final sentence of 7.27):

> *Each product individually*
>
> *7.26 Under this approach, the passive access price would depend on (and vary according to) the specific downstream service being provided by the access seeking CP. Once the equivalent active remedy product was identified, the dark fibre price would be set equal to the active price minus the active costs avoided.*
>
> *7.27 In principle, this approach would prevent value-based arbitrage as CPs could no longer target the highest value services simply to exploit the margin variation used to recover common costs. However, it would be necessary to monitor downstream sales by the access seeking CPs to ensure use was being accurately reported. Monitoring of this type may not be practical.*

455. Ofcom's May 2015 BCMR Consultation includes the following text:

> *9.21 We acknowledge stakeholders' concerns that, if we were to limit the allowed use, this would restrict the ability of CPs to develop their products based on passive inputs and that this is likely to significantly reduce the benefits of passive access. In particular, limiting allowed use would not allow CPs to maximise the scale and scope efficiencies of their investment and to target emerging customer requirements, while on the other hand leading to further complexity in the design of the remedy and reducing the practical use that can be made of dark fibre.*
>
> *9.22 We also note Virgin Media's concerns around monitoring and enforcement of the*

> *passive remedy when applied in certain geographic areas or to certain products. We acknowledge that if we were to limit the product scope of a passive remedy, this may lead to some challenges in relation to establishing the actual downstream use of dark fibre.*
>
> *9.23 While restricting the scope of passive remedies to particular applications, such as mobile backhaul, may reduce the dynamic efficiency risks, it would only be appropriate if innovation benefits were concentrated in a particular market segment. In addition, as explained in Annex 26, our proposed pricing approach of having a higher value benchmark product (i.e. 1Gbit/s EAD) significantly reduces the scale of dynamic efficiency risks.*

456. There are three points of relevance here.

457. First, at paragraph 9.21 Ofcom states that restricting use will significantly reduce the benefits of passive access. Second, at paragraph 9.22 Ofcom acknowledges the legitimate concerns of Virgin Media regarding monitoring. Third, at paragraph 9.23 Ofcom states that restricting the scope might be appropriate if the benefit of DFA is clear in one sector and clearly unattractive in other sectors. However, with Ofcom's current proposal the exact opposite is the case. The primary benefits apply outside the proposed sector i.e. for VHB and not in the sector for which it is proposed i.e. Lower Bandwidth CISBO services. It is therefore at complete variance to what Ofcom stated here in the May 2015 BCMR Consultation. Put another way, Ofcom's pricing set at EAD 1G minus with applicability to Lower Bandwidth CISBO services must minimise dynamic efficiency gains.

458. At Annex 4 of the May 2015 BCMR Consultation, Ofcom did not offer stakeholders a Question on the practicability of a restriction which would be enforced by contract and monitoring.

459. In summary, there is no suggestion in these documents that the current proposal was envisaged even as a remote possibility. If contrary, the possibility that contractual limitations would be adequate by themselves to allow a bandwidth cut-off for use of DFA then this could have been used in two ways. The most obvious thing that Ofcom could have done would have been to allow BT to do this in the original DFA proposal where the benefits were supposed to be in the VHB market segment. At a stroke of the proverbial regulatory pen, Ofcom could simply have allowed BT to refuse to supply DFA for lower bandwidths.

460. In turn, this would have avoided all the subsequent arguments in the vast amount of material lodged in the Consultation itself and subsequently at the CAT on DFA impacts regarding: (a) the impact on the bandwidth gradient for 1G and below and whether or not DFA hastened or not the equalisation of the 100M and 1G active prices; and (b) the commercial rationality of what BT was proposing to do in response to the DFA obligation and the LLCC. It would also have made more logical sense as a proposal if Ofcom's assertion about high migration up from the lower bandwidths was going to occur.[154]

461. An alternative option was to advance the current proposal as a cautious foray into passive remedies but one where the bulk of circuits could be exposed to the 'innovation hypothesis'.

462. In the 2016 BCMR no consideration was given to restricting the DFA remedy to particular bandwidths via contractual limitations. It follows that this Consultation is a completely new scenario and the pricing of DFA at EAD 1G minus cannot be assumed to be the correct solution on Ofcom's own terms of reference in this Consultation.

463. In other words, all the analyses of relative benefits of alternative pricing approaches in Annex 26 of the May 2015 BCMR Consultation cannot be simply transposed to the assessment of the current proposal. For example, if it were the case that we could restrict usage to Lower Bandwidth CISBO services and prevent misuse, it would be arguably logical simply to move to cost

[154] We consider that this matter was never satisfactorily resolved one way or the other at the CAT.

orientation immediately putting consideration of other economic efficiency arguments to one side.

464. Openreach respectfully suggests that the current proposal was never considered by Ofcom to be viable option because it was always recognised that there would be huge difficulties in enforcing a contractual limitation of this kind. If such problems had easy solutions we would have seen such a proposal especially coming after the Colt Appeal when Ofcom agreed it would review the case for passive access in the following BCMR.

Overall conclusions on the contractual limitation to DFA to Lower Bandwidth CISBO services

465. Ofcom in the Colt Appeal set out clearly and eloquently why the current proposal is a non-starter. Ofcom has not consulted on this since then and this Consultation does not even include a question to stakeholders on the implications of Openreach being able to monitor or BT contractually limit usage in this way.

466. If the industry is forced to go down this route, there will be very significant costs which may prove to be wasted. Either in the next BCMR, Ofcom decides the DFA should be extended into VHB in which case the monitoring will be wasted or alternatively, CPs decide not to purchase the product in the interim even though Openreach will have to develop its systems to cope with no demand. The next BCMR may produce other combinations of products and geography were DFA is not appropriate in any case.

(iv) Risks if dark fibre cannot be successfully constrained to Lower Bandwidth CISBO markets

467. As we have set out above, whilst Ofcom asserts at paragraph 4.64 that many of the risks previously identified in the 2016 BCMR Statement are no longer relevant, given that Openreach cannot effectively monitor or BT enforce a contractual restriction to limit DFA take-up to Lower Bandwidth CISBO services, it is not the case that the risks identified in the 2016 BCMR Statement (including the impact on rival investment in VHB services) are largely now irrelevant. On the contrary, these risks are still relevant because BT will face a range of difficulties in effectively enforcing such a restriction. Further, given the uncertainty surrounding effective enforcement, a creep of dark fibre usage into the VHB segment is inevitable (and the risks previously discussed in this regard would be triggered). In particular, Ofcom has not assessed the risks of:

a. The potential need for Openreach to rebalance its active pricing structure by flattening the bandwidth gradient.

b. The potential for competitors to use dark fibre to arbitrage VHB CISBO services, potentially leading to distorted investment signals and productive inefficiencies.

c. The potential for adverse impacts on rival investment and existing competition in VHB CISBO services. In any case, the incentives of rivals to invest could be adversely affected because the value of their investment will depend on BT effectively enforcing a contractual restriction over which they have no control.

468. Ofcom has not addressed the great volume of evidence which was put before the CAT in relation to the introduction of a dark fibre remedy (for all CISBO services). Given the difficulties in successfully constraining a dark fibre product to Lower Bandwidth CISBO markets, the same concerns that applied in the 2016 BCMR with regard to Ofcom's cost benefit analysis continue to arise. We therefore continue to rely on evidence that was put before the CAT in BT's appeal of the 2016 BCMR and request that Ofcom considers this fully. Given the short timescales provided to respond to this DFA Consultation, we have simply set out below where relevant evidence and comments from BT are located on the costs and benefits of a dark fibre remedy as imposed under the 2016 BCMR. These apply equally in the present scenario if dark fibre cannot successfully be constrained to the Lower Bandwidth CISBO markets. Ofcom has wrongly dismissed these.

Table 4

Evidence on risks of dark fibre if not successfully constrained to Lower Bandwidth CISBO services

Evidence topic	Evidence location
Impact on VHB segment	NoA: §§211(1) and 212-217; Reply: §§120-132 Logan 2: §§90 and Table 5 Maldoom 1: §§17; 98-100; 287-280 Maldoom 2: §§5(a)-(c), 44-51; 52-54
Unrealistic expectations of innovation benefits	NoA: §§247-258 Reply: §§152-157 Logan 1: §§10; 25-26; 110 – 114; 115-122; 142 Logan 2: §§13; 26; 136-147; 149-161; 167-170 Reid 2: §§6-7; 10-32; 67-69; 76-77; 78-98; Annex 1 Reid 3: §§30-31; 42; 156-162; 183-244 McGuire 1: §§10-16, 51-64, Table 1 and Annex 3 McGuire 2: §§9-13, 18, 19-50, and 106-133 Maldoom 1: §§19, 230-243; 286 Maldoom 2: §§61-86
Unrealistic expectations of improvements in service quality	NoA: §§259-260 Reply: §§158-163 Logan 1: §§123-124; Logan 2: §25; §148 McGuire 1: §§8-9, 17-50; Annexes 1 and 2 McGuire 2: §§5-8, 14-17, 51-105; Annexes 1-3
Overstated potential for gains, and fail to have regard to the potential for losses, in productive efficiency	NoA: §§264-269 Reply: §§164-165 Reid 2: §§92 Reid 3: §§163-166; 169-182 Maldoom 1: §§225-228; 283 Maldoom 2: §§87-95
No plausible route to the roll-back of active remedies	NoA: §§270-274 Reply: §§166-168 Maldoom 1: §§244-253 Maldoom 2: §§144-146
Understated effect of dark fibre on the bandwidth gradient, cannibalization and aggregation, and hence understated adverse effects on allocative and dynamic efficiency	NoA: §§278-290 Reply: §§171-185 Logan 1: §§10; 23-24; 28 – 32; 125-161; Annex 1; Annex 2 Logan 2: §§8-12; 17-18; 19-23; 80-101; 105-114; 115-120; 121-132; Annex 1 Reid 3: §§167-168; 181-182

Evidence topic	Evidence location
	Maldoom 1: §§14-15, 154-194; 284 Maldoom 2: §§5(c); 28-60; §§154-177
Adverse effects on infrastructure revenues and investment incentives for BT and other CPs, and hence adverse impact on infrastructure-based competition	NoA: §§291-301 Reply: §§186-193 Maldoom 1: §§69(f), 97-101, 194-224, 290 Maldoom 2: §§5(c), 12-18, 34-40, 142-143, 178-195
Risk of undermining productive efficiency, leading to the deployment of less fibre	NoA: §§302-311 Reply: §§194-196 Reid 2: §§8-9; 33-77; Annex 2 Reid 3: §§32-35; 41; 155; 163-166; 169-182
Inconsistent approach to timeframes for assessment of costs and benefits	NoA: §§211(3)(c) and); 312-316 Reply: §§197-198 Maldoom 1: §§20, 69(c)-(d), 77-86, 287, 289 Maldoom 2: §§5(a); 121-146
Difficulty and cost of reversing the dark fibre remedy once implemented	NoA: §§211(3)(d) and 317-323 Reply: §§199-201 Logan 2: §§24; 102-104 Maldoom 1: §§69(g); 102-109 Maldoom 2: §§5(b); 121-146
Inadequate balancing exercise of the benefits and risks of introducing the dark fibre remedy	NoA: §§211(3)(e) and); 324-328 Maldoom 1: §§13, 18, 21; 27-34, 69(a)-(b); 70-76; 110-118; 254-273; 285; 291 Maldoom 2: §§19-27; §§35-61

Source: BT's BCMR 2016 Appeal submissions

(v) Other risks

The current proposal will hinder the industry from progressing

469. We are particularly concerned that Ofcom is seeking to introduce hastily a DFA remedy limited to Lower Bandwidth CISBO markets when Ofcom's previous analysis indicated the main benefit of DFA would be for VHB services. The underlying cost-benefit assessment remains unchanged according to Ofcom in spite of a profound change in scope. We consider it of greater benefit to review all the evidence properly at the next BCMR and not waste additional industry resource on the present Consultation. The next market review might also allow a more comprehensive discussion on what role if any is appropriate for DFA for mobile services such as 5G.

There would be material costs wasted from this proposal

470. Openreach, BT and other CPs will be required to spend a lot of money which potentially could be wasted if a subsequent thorough market assessment shows DFA is not appropriate for parts of the Lower Bandwidth CISBO market and/or parts of the country. Industry has to have a clear appreciation of the long-term viability of this as a remedy; otherwise it has to be taken as an irreversible regulatory decision which will hit investment incentives. In practice, Openreach cannot actually meet Ofcom's timetable anyway for DFA provision and this Consultation risks opening up further litigation which will hamper a proper market assessment in the next BCMR.

Difficulties in reversing if implemented

471. Ofcom does not seem to appreciate that there will likely be additional costs of Openreach being forced to install monitoring equipment and which would be a sunk cost to at least some degree if it were then subsequently found to be unnecessary. These costs will have to be recovered somehow to meet Ofcom's stated principle at paragraph 4.66 – "Our dark fibre remedy does not undermine BT's ability to recover its costs". What is in this Consultation also appears to be completely contradicted in every respect with what Ofcom experts stated in the Colt appeal.

(vi) Conclusion: There is no reasonable case for DFA for Lower Bandwidth CISBO services

472. Ofcom frames Question 4.1 on overall benefits as if it is for Openreach (or other respondents who disagree with Ofcom's proposals) to provide evidence as to why Ofcom is wrong. This is not correct. It is for Ofcom to ensure that its proposasl are proportionate, and such a proportionality assessment includes ensuring that the benefits of its proposal will outweigh the risks (and that the risks are not so significant as to prevent it from introducing a DFA remedy). It is clear Ofcom has not demonstrated that the benefits of introducing a DFA remedy for Lower Bandwidth CISBO services outweigh the risks. On the contrary, we consider that there are significant risks in proceeding with the current proposal and very little that could be done to mitigate these risks.

473. Ofcom's current case targeting Lower Bandwidth CISBO services is not based in credible economic analysis. Openreach is clear that the case for DFA as currently advanced by Ofcom is fundamentally flawed on its own terms. The only conceivable basis of the current case holding true of DFA for Lower Bandwidth CISBO services having net benefit even as a remote possibility, is that stakeholders are not intended to take it at face value. In which case this is not a genuine consultation at all; it would be premised upon an unacknowledged pre-determined decision to introduce a dark fibre remedy in respect of BT's assumed SMP in markets which have not yet even been defined, let alone assessed.

C. OFCOM'S FAILURE TO CONSIDER THE IMPACT OF PIA AND THE CID

474. In the 2016 BCMR consultation Ofcom stated that DPA was not an appropriate remedy for the BCMR and imposed DFA instead. Since that time, Ofcom is now consulting on business use for the DPA product, though the purpose of the network deployment is primarily the delivery of broadband services to homes and businesses.

475. At paragraph 3.13 of the DFA Consultation, Ofcom refers to the current proposal in the DPA consultation to allow business use only where the use case is predominantly for the development of mass broadband services in the relevant areas and states that as such, it does not believe this would be an appropriate option for business connectivity market, and hence that DFA is still required. However business broadband can be a primary purpose of DPA deployment, and in a full fibre network this can be a point to point 1G symmetric service, which is a clear substitute for leased line services.

476. We do not believe that Ofcom has considered the change in regulatory approach on DPA in its proposal for DFA.

477. First, given that business usage is to be possible on DPA, Ofcom should conduct a proper impact assessment to understand how the DPA remedy, DFA remedy and active products will interact, including an assessment of how the relative prices could influence the market.

478. Second, we believe Ofcom is understating the impact that the DPA remedy will have on the business market. CityFibre has recently announced, in a partnership with Vodafone that they will build Fibre to the Premises (FTTP) to at least 1 million homes (and up to 5 million homes) in the coming years. We anticipate that DPA is likely to be utilised to facilitate this and once built, it will also be able to serve business customers in a minimum of 12 major towns, including the mobile backhaul requirements of Vodafone (and potentially other MNOs). Ofcom's 'safe harbour' is not

well founded.

479. On a closely related matter, the Civil Infrastructure Directive (as transposed into domestic legislation by The Communications (Access to Infrastructure) Regulations 2016), we note that the Consultation is completely silent. This is not appropriate. Again, as noted in BT's appeal of Ofcom's 2016 BCMR, Ofcom must investigate and analyse the likely potential impact of the Civil Infrastructure Directive (again on a modified greenfield basis, i.e. assuming no regulation in the market). Again, we continue to rely on BT's submissions on this matter in its appeal to the CAT on the 2016 BCMR. See in particular, BT's NoA: §§211(2) and 218-243; BT's Reply: §§133-149;Logan 2: §162 – 166, Maldoom 1: §§62-66; 69(e), 85-96; 288 and Maldoom 2: §§96-120.

D. THE DESIGN AND IMPLEMENTATION OF THE PROPOSED NEW DFA PRODUCT

480. Without prejudice to our comments in sections A, B and C above about the lawfulness and proportionality of Ofcom's proposals to introduce a new dark fibre remedy limited to Lower Bandwidth CISBO services, this section sets out our comments on the design and implementation of the proposed remedy.

481. Contrary to Ofcom's assertions, Openreach is not ready and able to supply dark fibre. The product specified for the purposes of Ofcom's proposed intervention is different to the product that Openreach would have been required to introduce in October 2017. Importantly, it requires the negotiation of contractual restrictions which are not straightforward (and, in all likelihood, unworkable, as set out further above) as well as a new reference offer. We would also need to engage in operational trials, which were not undertaken as part of the previous process. Ofcom has not sought any evidence (as far as we are aware) on these issues.

I. Design of the proposed remedy

Usage limit to Lower Bandwidth CISBO services

482. Ofcom's Table 3.2 of the DFA Consultation, "Summary of non-price design aspects of dark fibre", provides no indication as to whether the dark fibre remedy is to be restricted to a single traffic stream or service at 1G or below or whether a customer can support several services ("wavelengths") at the same time on a fibre circuit provided that each wavelength service does not exceed 1G. This must be clarified. It is our view that using a fibre to support several wavelengths should not be permissible as the total traffic would exceed the maximum 1G limit.

483. Further, below 1G, such wavelength/frequency transparency is not an important feature since products use well known commercially available wavelength 'windows' for Wavelength Division Multiplexing ("WDM") which would be perfectly acceptable on what is normally referred to as dark fibre.

Requirement to provide two fibres

484. At paragraph 3.36 of the DFA Consultation, Ofcom proposes that to ensure purchasers of dark fibre are not at a competitive disadvantage to purchasers of active wholesale services, CPs should be able to obtain dark fibre circuits in similar configurations to Openreach's current range of active services. On this basis, Ofcom proposes requiring BT to provide one or two fibre circuits. By "two fibre circuit" we understand that BT would be required to offer a dual-fibre dark fibre option (two fibres in the same cable sheath along the entire end-to-end route), as opposed to a resilient product offering (two fibres available on separate physical routes using no common cables).

485. This may be applicable for a dark fibre remedy which is not constrained by bit rate, where solutions may require a fibre pair for separate transmit and receive paths, due to engineering constraints (for example when modulation techniques are used to transport 100G coherent wavelengths), and a single fibre working solution cannot be used to transport the traffic. However, this is not the case at 1G and below.

486. Since 2007 Openreach has supplied its active Ethernet Access Direct (EAD) product at rates of up to 1G based on the use of a single fibre which supports both directions of communication between sites. This service was also increased to support 10G working in September 2015, still using a single fibre. This is achieved with the use of widely available optical transmitters and receivers from several suppliers that offer single fibre working.

487. It is not viable for a purchaser of dark fibre to competitively offer services at 1G and below using two fibres compared to a single fibre working active product (the cost of a two fibre solution based on Ofcom's pricing methodology would exceed the cost of a 1G EAD service), as is shown in Table 5 below.

Table 5

Comparison of costs of a 1G service

	EAD Standard		EAD LA	
	Connection	**Rental**	**Connection**	**Rental**
Single fibre DFA	£2,066	£2,541	£2,022	£1,968
Active Service	£2,100	£3,198	£2,050	£2,598
Dual Fibre DFA	£3,056	£4,992	£2,980	£3,848

Source: DFA prices for single fibre and dual fibre from Openreach's Final Reference Offer compared to EAD 1G prices in effect at that time. Rental prices exclude Mainlink distance-based charges.

488. Further, the whole of the existing EAD product portfolio can be replicated by a CP using dark fibre with only a single fibre rather than using a fibre pair.

489. Given that dual fibre working is not necessary to replicate Openreach's current range of active services at 1G and below, we do not consider it would be appropriate or proportionate to require BT to provide a fibre pair dark fibre service.

II. Implementation timescales

490. At Table 3.1 of the DFA Consultation, Ofcom sets out the following timetable for implementing the dark fibre remedy:

a. Publish a Reference Offer within one month of the date of the publication of the Final Statement.

b. Launch dark fibre access within one month of the date of the publication of the Final Statement.

491. Ofcom notes that it intends to publish the Final Statement before the end of March 2018.

492. At paragraph 3.55 of the DFA Consultation, Ofcom notes that it considers that Openreach will be able to conclude those activities which it needs to undertake before launching the dark fibre product within a period of one month. Ofcom's expectations regarding the readiness for launch of a dark fibre product are unrealistic. In fact, the timescales proposed by Ofcom for a scale launch of dark fibre are simply not achievable.

493. Until 23 November 2017, Ofcom had given Openreach no indication of timescales it was considering for the re-imposition of a dark fibre access remedy. Ofcom wrongly assumes that preparations for introduction of DFA product were fully completed and that no additional testing or Customer trialling needs to take place, and therefore within a month of Ofcom's final statement being published a full, successful product launch for DFA could take place.

494. However, preparation for the original DFA product launch was suspended by Openreach following the CAT Ruling which was announced on 26th July. Whilst our DFA Operational Support Systems ("OSS") capability was delivered, there had been very limited model office testing undertaken. This was due to the timescales we were originally working to achieve a 1st October 2017 launch date following a complex 5 system release development. This model office testing was restricted only to the DFA order provision journey.

495. Openreach also suspended the DFA CP trial prior to it commencing in August 2017. As such, no live orders have been tested, nor have the CP triallists or Openreach undergone any live operational readiness testing. The operational readiness training on our SVF systems was also suspended as was all CP establishment for the DFA product.

496. If Openreach were to resume the programme to complete the DFA service for launch it requires

the following items to be completed:

a. **System upgrades**– The DFA product journey would require system testing and upgrades to bring the system in to line with the improvements which have been made to the EMP platform for EAD products since 1st October 2017. Due to our systems development cycles, the upgrades would not be completed until July 2018.

b. **CP trial** – A trial would be required to allow thorough testing of the system and processes before volume orders are placed and a DFA product is launched at scale.

c. **Training** – We would need to upskill our desk and field resources to deliver DFA. We would be required to recommence this during Q4 17/18 (this is a peak busy period with our CP customers and as such any diversion of resource for this purpose could have negative impacts elsewhere)

d. **Contract negotiations** – We would require to negotiate all required revisions to the DFA product description, contract and associated Reference Offer with Industry

e. **Establishment** – We would need to commence establishment with any new CPs interested in consuming DFA, update new T&Cs with existing CPs and obtain agreement to the revised T&Cs.

497. After the dark fibre remedy was imposed in the 2016 BCMR, the process of negotiating and agreeing the Reference Offer with industry took nine months. Whilst much of this Reference Offer could be re-used, it cannot be simply adopted unchanged. The product which Ofcom is now proposing to require BT to launch is different in scope to the dark fibre remedy imposed under the 2016 BCMR. The product description will need to be updated. Further, CPs would want to review, negotiate and agree additional contract terms that Openreach would need to introduce to ensure that the dark fibre remedy was not used for bandwidths above 1G (including agreeing solutions for monitoring a bandwidth restriction).

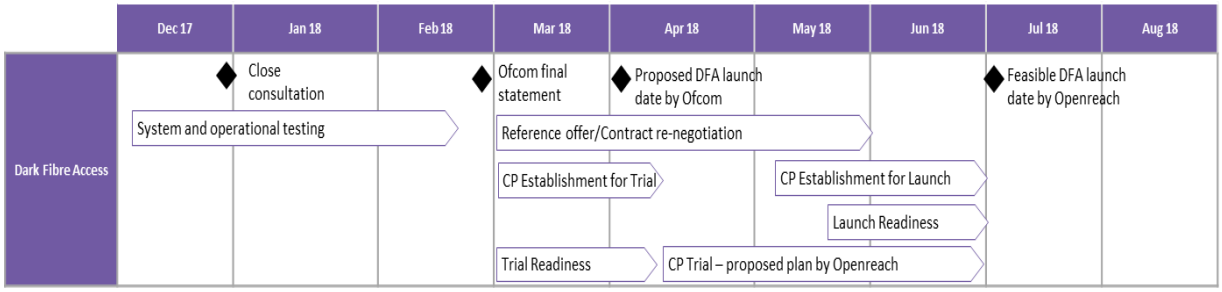
498. It is unrealistic to expect that Openreach could unilaterally alter the terms of the Dark Fibre Access (DFA) contractual terms and publish these items as full and final to Industry within a month of the final statement being published with minimal engagement with CPs; CPs will rightly want an opportunity to comment on discuss proposed restrictions in the contract by Openreach. Failure to give sufficient time to allow these negotiations to take place in the same spirit as the previous DFA Reference Offer negotiations took place is simply liable to invite disputes from CPs at a later stage (given the parties will not have had an opportunity to understand their respective positions and agree appropriate solutions).

499. It is also to be noted that the post product launch system delivery of the new EMP system features of View My Job (VMJ) and Keep Customer Informed Manager (KCI-M) will only be possible for DFA portal order consumption by CPs from April 18, during our proposed trial ordering phase. The B2B interworking will need to be established throughout Q4 with CP consumption only possible from July 18. Existing EMP KCI's for the DFA product launch will only be available until that point.

500. The following figure shows a launch plan for DFA which would be more feasible to implement.

Figure 2

Openreach feasible plan for launch of DFA



Source: Openreach

E. THE IMPACT OF DFA ON THE LLCC

501. In this section we comment on section 5 of the DFA Consultation, which sets out Ofcom's provisional views on the impact of the proposed dark fibre remedy on the charge controls imposed in the Lower Bandwidth CISBO markets. It is without prejudice to our comments in sections A, B and C above about the lawfulness and proportionality of Ofcom's proposals to introduce a new dark fibre remedy limited to Lower Bandwidth CISBO services. In summary:

a. We consider Ofcom has materially understated the volume impact of DFA in 2018/201;

b. Ofcom does not take sufficient account of the impact of aggregation and cannibalization of lower bandwidth services;

c. We have concerns with the structure of the charge control;

d. We have concerns about the proposals for the pricing of DFA mainlink where there is more than one optical fibre, should such a remedy be imposed;

e. We have concerns about how Ofcom provides for the NDR adjustment to be made for mainlink prices where there is more than one optical fibre; and

f. We have concerns about the distorting impact of the NDR statement in that it will:

i. Require us to price below LRIC for some services; and

ii. Distort competition.

I. Understatement of the volume impact in 2018/19

502. Whether Ofcom have correctly assessed the volume impact will depend on how CPs react to the introduction of a DFA service restricted to the market for Lower Bandwidth CISBO services, justified by the temporary market definition. We see two situations.

503. First, the more likely scenario in our view, a CP could believe that the DFA product will only be restricted to 1G and below for 2018/19. Ofcom states within the 2017 BCMR Statement that the current finding of no SMP for VHB should not be taken as an indication of the likely outcome of the 2019 BCMR. CPs could take this as a signal that, Ofcom will be likely to find BT has SMP in some areas for the provision of VHB services, and as such that it is likely the DFA remedy will be unrestricted in terms of bandwidths from April 2019 (at least in some geographic markets). We believe this is the more rational CP assumption given the signals from Ofcom and the shared understanding across industry that VHB is where DFA has the strongest demand. We understand CPs are looking to use DFA to support 5G rollout and there is therefore an expectation that Ofcom will look to impose this remedy in the next BCMR.

504. In this situation, some CPs whose service demands are not immediate are very likely to delay demand for VHB services in 2018/19 and hold out for the introduction of an unrestricted DFA remedy. VHB is typically used for MNO backhaul or fixed backhaul. Investment programmes take place over a period of years and timings are within the control of the CPs. It would therefore be relatively straightforward for such CPs to delay an upgrade programme by six months.

505. We therefore believe Ofcom has erred in its volume assessment. We believe the introduction of DFA will impact VHB circuit volumes in 2018/19 as CPs delay purchases of VHB and await the outcome of Ofcom's full remittal consideration. Our own forecast estimation is that ✂ VHB circuits will be deferred. This means Ofcom are incorrect to adjust out the common cost uplift adjustment in full when calculating the value of X for the LLCC.

506. Second, alternatively, a CP could consider that DFA can effectively be restricted to EAD 1G and will remain restricted at this level in the next BCMR period. As we believe that the majority of the demand and use case for DFA was for VHB services, then the efficient demand for a DFA product

restricted to Lower Bandwidth CISBO services will be low in 2018/19. This is because the cost saving will be minimal (as we have calculated it, as set out above at section 5.B.I(ii)).[155]

507. In addition some CPs may install WDM equipment and limit the bandwidth to 1G or below to meet any contractual restriction imposed by Openreach.[156] The CP could therefore order DFA now, even if the requirement is for a VHB service, accepting the short term compromise of restricted bandwidth. In this situation, further VHB services would be lost in 2018/19, leading to a further under recovery towards fixed and common costs.

508. There could also be a further impact on VHB demand in 2018/19 if some CPs choose to ignore any contractual limitation imposed to restrict DFA services to Lower Bandwidth CISBO services. As set out above at section 5.B.II(iii), given the difficulties in monitoring such a restriction we consider this a real and significant risk. In this situation further VHB services would be likely to be lost in 2018/19, leading to a further under recovery towards fixed and common costs.

II. General issues with Ofcom's forecast of DFA

509. A further point we would like to draw Ofcom's attention to is that within the DFA Consultation, as with the 2016 BCMR Statement, there are differences in our view of volumes compared to Ofcom's. While in the current period under consultation they are necessarily smaller (given that it is only for 12 months) we are concerned that as Ofcom moves forward into the 2019 BCMR review that these errors will perpetuate and become more material. The following impacts are not taken into account in Ofcom's forecast of DFA: (i) the impact of aggregation; (ii) the volume impacts of cannibalization by DFA on EAD 100M volumes.

The impact of aggregation

510. Where multiple 100M services are on the same route, a CP will have a strong commercial case to replace these with a single DFA circuit. Ofcom model that each active circuit lost is replaced by a passive circuit on a one for one basis. However, this neglects to take aggregation into account and is therefore unrealistic. As CPs will focus on the strongest commercial cases first (for example where up to 5 circuits are on the same route today) the most significant impact of aggregation will be experienced sooner after the launch of dark fibre. By neglecting to take this into account Ofcom are overstating the volume of DFA connections, understating the impact of DFA on migrations of the existing base at 100M, and overestimating Openreach's cost recovery. This has been explained to Ofcom previously in the second witness statement of Mr Logan in BT's appeal of the 2016 BCMR and Ofcom should have taken this into account.

The volume impacts of cannibalisation by DFA on EAD 100M volumes

511. We expect there to be large scale cannibalisation that will shift DFA to a mass market product from 2018/19, ✂

. This was been explained in detail to Ofcom previously in the second witness statement of Mr Logan submitted to the CAT (see from paragraph 90). Ofcom has not taken into account this information but should have. For ease of reference, we set out our comments again below.

512. As was common ground between BT and Ofcom during BT's appeal of the 2016 BCMR, the bandwidth gradient between 100M and 1G services is reducing over time, although there was disagreement about the period of time over which this is happening. ✂
. The table below shows the provisional price points currently being

[155] Note, as explained below, we consider there is likely to be greater inefficient demand than Ofcom forecast driven by cost arbitrage opportunities for 100M services.

[156] This may not may not be allowed under contract, depending on the reference offer negotiations to be held after the final statement is published.

modelled for April 2018.

Table 6

Openreach provision price for LLCC FY 18/19

✂

Source: Openreach Pricing Team

513. To put this into context, ✂

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514. The collapsing of the bandwidth gradient between 100M and 1G services is caused by a number of factors.

515. ✂

.[157]

516. The second factor relates to the constraint posed by Openreach's FTTP services, which exists even if Ofcom disregarded the internal financial constraints outlined above. The price of broadband services delivered over the shared infrastructure of FTTP means that symmetric 100M services are now available using 'consumer' broadband products. Whilst the geographic footprint for these technologies (FTTP) is currently limited, Openreach has announced plans to extend this substantially.[158] The prices for these products are currently below those for Ethernet 100M ✂

[157] Through data used to generate our Regulatory Financial Statements we can see that there is a significant difference in the relative financial positions of EAD 100M and EAD 1G, with EAD 100M showing a Return on Capital Employed of around ✂ for rental charges. The comparable figure for EAD 1G is around ✂ .

[158] See http://www.btplc.com/News/#/pressreleases/openreach-makes-gigabit-speeds-available-across-the-uks-largest-wholesale-fttp-network-1638866. It is noteworthy that Ofcom's 2015 BDRC survey showed a very high proportion of business customers planning to migrate down to these technologies and not up the bandwidth chain on Ethernet.

517. ✂

.[159]

518. The third factor concerns timing and irreversibility. Ofcom states that the impact of DFA in this review is limited and over the medium and long term the risks can continue to be managed through careful regulation.

519. Ofcom will need to conclude on their plans for DFA around Q4 2018/19. It will be too early then for Ofcom to establish what to do since this will be less than a year since the initial launch of DFA. Therefore realistically the regulatory environment and price structure Ofcom has set at this time will be in place until the subsequent charge control. This would mean the opportunity to change the approach based on actual data will be for the control which is due to come into force in April 2022 at the earliest and even later if the review period increases, as is possible. This factor has to be taken into account in our decisions on how to respond to the current LLCC.

520. By consistently ignoring these comments on both the potential for aggregation and cannibalisation of 100M circuits, Ofcom is underestimating the potential demand from DFA, which means all subsequent calculations for the charge control, and indeed the risks and benefits of the remedy itself, are incorrect. However, this increase in take-up would be driven by inefficient price arbitrage opportunities rather than by the innovation benefits which Ofcom seeks to foster.

III. Structure of the DFA charge control

521. We understand Ofcom's intention to limit price arbitrage from the launch of DFA by setting the price by reference to EAD 1G services. However we believe there are two areas where Ofcom's charge control structure does not meet this intent.

522. Firstly, Ofcom distorts the market to favour DFA in the way it adjusts the price of the EAD 1G circuit to remove the active equipment costs.[160] Ofcom adjusts out of the price of DFA, the cost of active equipment using the Long Run Incremental Cost (LRIC) of the EAD 1G service from the prior year regulatory financial statements (RFS). The LRIC from the RFS is an appropriate attribution of costs to each service, however we do not believe it to be appropriate to use this attribution in this context. As shown in Annex A, only ✂ of the LRIC reflects the actual cost of the equipment. While the other allocated overheads may well be saved in the long run, is a very long period of not providing active services before Openreach would be able to save costs such as exchange accommodation and engineer vans and tools. This overstates the cost savings from DFA, and means DFA is priced artificially low compared to EAD 1G.

523. Further, the LRIC in the RFS is historic. This is not only because for April 2018 DFA pricing we would need to refer to costs that relate to 2016/17, but also because this reflects the depreciation of assets bought up to five years earlier. Given equipment costs have been decreasing over time, this means the costs adjusted out of EAD 1G to calculate the DFA price are overstated. This goes against how Ofcom generally regulate cost orientated prices. Ofcom normally requires cost orientated products to be priced by reference to a forward looking LRIC. For example the

[159] ✂

[160] This point has been made to Ofcom in a letter to Gary Carey dated 21 June 2017.

2017 BCMR statement has a cost orientation obligation on Indirect ECCs which need to be assessed on a forward looking basis,[161] whereas here the LRIC costs need to be historic.

524. To avoid the market distortion that will follow from the prior arbitrage, Ofcom could instead remove the active equipment cost by adjusting out the current equipment purchase cost amortised over an appropriate asset life.

525. Secondly, Ofcom say in 4.73 that "Openreach can also incentivise providers through appropriately high callout charges where a fault is incorrectly diagnosed." However the legal instrument requires that Time Related Charges (billed for visits where no Openreach fault was found) are the same for DFA as for Ethernet. This leaves no scope to charge for anything other than the cost of the engineer attending (as TRCs are charge controlled at cost in the BCMR). There is no scope to set a charge that reflects the opportunity cost of the engineers wasted time, or include a premium to disincentives inefficient use of engineers.

IV. Issues with the pricing of Mainlink for more than one optical Fibre

526. Notwithstanding our belief that two fibre circuits are not appropriate or required for Lower Bandwidth CISBO services, we disagree with Ofcom's pricing approach for multiple fibre mainlink. The draft legal instrument sets out the following in Condition 9E.2:

This Condition applies to determining the charge for all Dark Fibre Access when more than one optical fibre is provided with the exception of determining the charge for Dark Fibre Access reasonably derived from the charge for the corresponding Main Link Service, in which case Conditions 9E.1 and 9E.1A apply irrespective of the number of optical fibres provided;"

527. This requires Openreach to charge the same for mainlink, regardless of the number of fibres involved. This is patently wrong. It is contrary to the principle that Openreach is allowed to recover efficiently incurred costs.

528. The cost of mainlink fibre, as generated within the Regulatory Finance Statements (RFS), takes the costs of duct and fibre installation and maintenance and then allocates these costs over the number of utilised fibres. This means a fibre recovers only its share of the common cable and duct costs. As a cost that is driven by the number of fibres rather than the number of circuits, if we are (incorrectly) required to offer a Fibre Pair mainlink it should at least be able to recover the cost of both fibres utilised. To not do so means that the cost of one fibre is not being recovered.

529. In the original BCMR consultation, Ofcom argued that it was concerned that pricing a Fibre Pair too low would "lead to inefficient demand for dual fibre circuits with negative implications for efficient network utilisation" (A23.157), and considered that a rental charge for a Fibre Pair should be based on twice the charge for a single fibre on these grounds. However Ofcom then put forward in A23.180 and A23.161 that if the price of mainlnk was also doubled then it would affect the "commercial viability" of dark fibre. Ofcom has therefore taken a policy decision that dark fibre should not reflect its true costs in order to increase demand for dark fibre, "consistent with our overall aims for the dark fibre remedy".

530. This is a revealing comment on Ofcom's view of the Dark Fibre product. If the product really created benefits from innovation and productive efficiency as Ofcom claim, the price would not need to be artificially reduced in order to encourage demand.

531. Ofcom's pricing approach for multiple fibre mainlink is therefore flawed and incorrect. It should not be required to encourage demand if Ofcom believe there is demand for Dark Fibre and benefits from it. Ofcom have failed to make the case that this form of pricing distortion is justified. However if this is what Ofcom are trying to achieve, then Openreach should still be allowed to recover the cost of providing the service. And nowhere else in the calculation of the price for

[161] Condition 9C.4 in the 2017 BCMR Statement, Legal Instruments.

active or passive services is Ofcom making any allowance for these costs to be recovered.

532. To give a view of the extent of the distortion Ofcom is introducing from this proposal, we have performed a simple calculation. This compares the price of a single EAD circuit, single fibre dark fibre circuit and Fibre Pair dark fibre circuit, assuming a mainlink length of 10km (appropriate for a backhaul circuit from exchange to exchange).

Table 7

Comparison of costs of a 1G service

	EAD Standard compared to Dark Fibre for Receipts and Expenditure CP (Final reference Offer)				
	Connection	**Rental**	**Mainlink**	**3 year total cost**	
Single fibre DFA	£2,066	£2,541	£2,660	£19,974	
Active Service	£2,100	£3,198	£2,760	£17,669	12% less than EAD
Fibre Pair DFA	£3,056	£4,992	£2,660	£26,012	30% more than EAD 47% more than single fibre

Source: Openreach analysis based on Openreach pricing

533. This shows that Fibre Pair is only 30% more than an EAD circuit, and only 47% more than a single fibre Dark Fibre Access, despite incurring twice the costs. Ofcom noted in the 2016 Final Statement that it did not think it would be appropriate to price multiple fibres at incremental cost, and yet it has imposed something that looks very much like it.

534. We also note that this requirement would be inconsistent compared to Openreach's Optical Spectrum Access product. This is a product which is provided with a fibre pair. However, for this product, the mainlink price has always been more than EAD, reflecting the extra cost of providing two fibres. Though as Ofcom notes at A23.154 of the 2016 BCMR Final Statement, this does not reflect the true incremental cost of the two the price differential allows some recovery towards the additional cost of a second fibre. Ofcom have made no such allowance for incremental cost recovery in their approach to pricing DFA multiple fibre mainlink.

V. Issues with NDR adjustment for Mainlink prices for more than one optical fibre

535. We have already noted above significant concerns with Ofcom's approach of pricing the mainlink for multiple fibres the same as for mainlink of a single fibre, making no allowance for the recovery of incremental or allocated costs. Ofcom compounds this issue by requiring an adjustment for non-domestic rates (NDRs) for a Fibre pair that is more than that for a single fibre. This leads to the unsustainable proposal that Fibre Pair mainlink must be sold for less that single fibre mainlink, despite incurring twice the cost.

536. In the BCMR Temporary Conditions at 9E.2 Ofcom require: "*the subtraction under 9E.1A(i)(b) shall instead be calculated by multiplying the amount of the non-domestic (business) rates payable per kilometre per annum for the relevant number of fibres in the circuit being purchased*,". For the current valuation tables this means a reduction for NDRs of 9.58 pence for a single fibre and 11.98 pence for a Fibre Pair. A Fibre Pair will therefore be 2.4 pence cheaper than a single fibre mainlink rate - which means the Single Fibre mainlink will be ✂ more than the price for Fibre Mainlink despite being twice the cost. We can see no explanation in the original 2016 BCMR statement or the NDR statement that shows Ofcom recognise this is happening, or to justify why such an irrational approach is appropriate. We therefore believe this to be an error on Ofcom's part and would expect Ofcom to correct this in its final statement.

537. We also discuss below that the compounded errors in the approach Ofcom is taking to mainlink, Fibre pair mainlink and the NDR adjustment mean that mainlink will be sold below FAC and is highly likely to be sold below LRIC in 2018/19.

VI. Impact of NDR Statement

Requiring pricing below LRIC

538. As discussed in our response to Ofcom's consultation on NDR costs in setting the DFA price, we believe there is an issue with the NDR adjustment approach with respect to main link charges.[162]

539. The NDR adjustment to main link rates per metre for CPs who pay NDRs on the Direct Rental Comparison (DRC) method is just under 10 pence per metre (ppm). The current mainlink rate for EAD 1G is 24ppm. With the LLCC requiring price reductions of CPI-13.5% from April 2019, this could reasonably be expected to reduce to 21.7 ppm. The adjustment for NDR would then result in a DFA mainlink price of 12ppm.

540. As per the 2016/17 Regulatory Financial Statements (the most recent published by BT), the fully allocated cost of mainlink services is 16.2ppm. This means the DFA mainlink price will be set well below the FAC of the service.

541. In reality, reductions are likely to be more heavily weighted to mainlink than CPI-13.5%. ✂

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542. ✂

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543. As such we do not agree with the aspects of the charge control which are designed to account for NDR costs.

Distorting the market towards DFA

544. The NDR statement aimed to remove a distortion downstream in the market, so that CPs buying DFA can compete on equal terms whether they pay NDRs on the Receipts and Expenditure basis on the Direct Rental Comparison basis. This creates a distortion between the market for active and passive services and Ofcom have not commented on, or put forward any argument to justify.

545. In making a deduction to reflect the NDRs paid by DRC CPs, Openreach under-recover fixed and common costs. Ofcom have corrected for this by adjusting the X of the LLCC to allow the recovery to be made by active services. In this short period – the volume and cost recovery impacts are necessarily limited by the 12 month period – Ofcom estimates this has an impact of 0.5 percentage points on the level of X (approximately £4m). Moving into the next BCMR period starting in April 2019 when volumes increase we would expect this to be far more material.

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[162] See paragraphs 4.29 to 4.35 of our response dated 22 May 2017.

[163] Please note that in the 2015/16 Regulatory Financial Statement the Long Run Incremental Cost for mainlink was ✂ . .

546. As the volumes of DFA increase, the under-recovery of costs will increase, and so will the amount that active services need to increase by to 'fund the under-recovery. This will lead to an increasing difference between the price of active services and passive services, which will continually reinforce: as the price of active services increases due to the common cost recovery, DFA will be relatively more attractive leading to higher volumes, which will increase the cost under recovery but lead to a smaller volume of active services that will need to recover the costs, pushing up the price of active services further still.

547. The pricing approach Ofcom have proposed for NDRs is not sustainable and sends the wrong economic signals, distorting the relative demand for active and passive services.

6 Non Dark Fibre SMP Remedies

A. LLCC

I. Calculation of the LLCC level of X

548. Below we set out our comments on the LLCC.

549. Ofcom adjusts the BCMR charge control to take account of the following:

a. Its new proposals for the dark fibre remedy; in particular no substitution effects on services above 1G:

b. Its new market definition; in particular its redefined core and additional CBD boundaries

550. These adjustments are approximations since Ofcom has not separately modelled the new basket services i.e. the approach it takes is to make adjustments to the costs and revenues of its original charge control baskets. It would be more accurate if Ofcom separately modelled the costs of the new charge control baskets.

551. Notwithstanding that, Openreach considers the following additional refinements are essential to improve the accuracy of the approximated adjustments:

a. The model should be adapted to allow for 1 year Xs to be calculated for 2018/19 using assumptions about what the price trends are for 2016/17 and 2017/18[164] rather than use a goal seek (see paragraphs 553 to 555 below);

b. At paragraph 5.28 Ofcom say they have modified main link volumes to account for the new CBD areas. This adjustment does not seem to have been performed in the Ofcom charge control model resulting in lower unit costs than is appropriate;

c. The DFA substitution effects of aggregation on EAD volumes and the volume impacts of cannibalisation by DFA on EAD 100M volumes should be allowed for in Ofcom's assumptions. This will have the effect of reducing forecast active volumes and the level of stranded assets resulting in higher forecast unit costs (see paragraphs 509 to 520 above);

d. Ofcom's forecast of BCMR Cumulo should be increased by ✂ for 2018/19 (see paragraphs 556 to 559 below);

e. Ofcom's forecast BCMR pensions cost should be increased by ✂ for 2018/19 (see paragraphs 560 to 563 below); and

f. As outlined above, there are a number of costs that have not been incorporated into Ofcom's cost model, in particular the costs of enforcing the bandwidth restrictions and an increase in unproductive visits by Openreach where a fault has been incorrectly diagnosed. In the time allowed for this response Openreach has not been able to estimate the impact of these cost exclusions.

Summary of impacts

552. In Table 8 below we outline the impact of these necessary adjustments on Ofcom's proposed X's where dark fibre has been assume in setting the X. The resulting X's (11% and 14%) should reduce when Ofcom takes account of the costs of unproductive engineering visits and enforcing bandwidth restrictions.

[164] As discussed in an email between Helen Lay (BT) and Noel Hall (Ofcom) 15 December 2017.

Table 8

Dark Fibre Assumed in setting the X

Dark Fibre Assumed in setting the X		
Scenario	**X in FY 2018/19**	
	Dark Fibre implemented	**Dark Fibre not implements**
Ofcom proposal	-13.50%	-15.75%
Openreach Adjustments		
Remove goal seek		✂
Adjust volumes for cannibalisation	✂	
Increase Cumulo costs	✂	✂
Increase pensions costs	✂	✂
Cost of enforcing the bandwidth restrictions	✂	✂
Cost of unproductive visits	✂	✂
Revised X	-11.00%	-14.00%

Source: Openreach analysis

Remove unnecessary goal seek

553. Ofcom sets out two scenarios[165] depending on whether the dark fibre remedy is implemented or not (table 9 below). The first assumes that dark fibre proposals would be implemented, but if it is not then the Period 2 X starting on 1 April 2018 is automatically adjusted to -15.75%. If the case is reversed, i.e. dark fibre is implemented even though it had been assumed not to, the Period 2 X would be adjusted down to -12.50%.

Table 9

Ofcom proposed Xs

	Ofcom proposed Xs		
Scenario	**Period 1 1/12/17 – 31/03/18**	**Period 2 FY2018/19**	
		DF implemented	DF not implemented
Dark fibre assumed in setting X	-13.50%	-13.50%	-15.75%
Dark fibre not assumed in setting X	-14.50%	-12.50%	-14.50%

Source: Openreach analysis

554. Ofcom's approach to calculating these Xs is to perform a goal seek. The model allows the single year X to be calculated for 2018/19 in both scenarios and we consider it unnecessary to use the goal seek function as proposed by Ofcom.

555. Openreach proposes a change in approach that avoids the need to use a goal seek function to determine the Xs and allows each adjustment to be stepped through in the same way as Ofcom had done. We adapted Ofcom's model to allow for one-year Xs to be calculated for 2018/19 using assumptions about what the price trends are for 2016/17 and 2017/18 and have shared this with Ofcom.[166] This demonstrated that the Period 2 Xs above should be reduced by 0.25%

[165] 2017 BCMR Statement, para 5.41.

[166] As discussed in an email between Helen Lay (BT) and Noel Hall (Ofcom) 18 December 2017

if the implementation of dark fibre is different to what had been assumed, i.e. from -15.75% to -15.50% and -12.50% to -12.25%.

Cumulo costs

556. Ofcom accepts in its 2017 WLA consultation that there will be a large increases in Cumulo costs in 2018/19.

"*In our March 2017 proposals we set out our expectation there would be a significant rise in BT's business rate costs due to the fourfold increase in its Rateable Value.*"[167]

557. Openreach has outlined its position with regard to Ofcom's forecast of Cumulo costs in its responses to Ofcom March 2017 WLA consultation (para 305 to 308) and in response to Ofcom's September 2017 consultation (para 32 to 56).

558. Cumulo costs equally affect BCMR services as well as WLA services. The Cumulo forecast in Ofcom's Temporary Conditions BCMR charge control model is based on an extrapolation of a Rating Valuation from 2014/15. Ofcom is aware and accepts Ofcom there has been a significant increase in the Rateable Value of BT's network and therefore Openreach will incur significantly increased Cumulo costs in 2018/19 compared to the 2014/15 baseline. Therefore, it is unreasonable for Ofcom to ignore this significant increase in costs which it was already aware of when setting the new Xs. We consider Ofcom should adjust the costs upwards in 2018/19 to reflect this increase in cost.

559. We estimate Ofcom's forecast BCMR Cumulo cost is therefore understated by ✂ for 2018/19 which overstates the X by ✂ .

Pensions costs

560. Ofcom says in its WLA consultation that "in light of BT's response [outlining the expected increase in pensions costs], we recognise that the accounting charge in 2015/16 might not provide a reliable basis for forecasting the charge in 2018/19."[168] Ofcom further say it "*remain[s] of the view that the accounting charge, as reported in the statutory accounts is an appropriate measure of the ongoing service cost and so should be included in our cost estimates of regulated services*".[169] This cost has increased compared to Ofcom's base year and is expected to increase even further e.g. the 2017/18 operating charge figure for the BT Group is provided to us by independent actuaries and is expected to increase by over ✂ year on year.

561. Openreach has outlined its position with regard to Ofcom's forecast of Pensions costs in its responses to Ofcom March 2017 WLA consultation (para 228 to 241) and in response to Ofcom's September 2017 consultation (para 228 to 241).

562. Pensions costs equally affect BCMR services as well as WLA services. Ofcom's forecast of pensions servicing costs is an extrapolation of 2014/15 costs. These costs rose substantially (✂) between 2014/15 and 2016/17. As explained in response to Ofcom's March WLA consultation we estimated the charge for 2017/18 would be ✂ more than the 2016/17 charge based on the most recent valuation review. Therefore, it is unreasonable for Ofcom to ignore this significant increase in costs which it was already aware of when setting the new Xs. We consider Ofcom should adjust the costs upwards in 2018/19 to reflect this increase in cost.

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[167] Wholesale Local Access Market Review: Further consultation on proposed charge control for wholesale standard and superfast broadband", Sept 2017, Ofcom.

[168] 3.133 Wholesale Local Access Market Review: Further consultation on proposed charge control for wholesale standard and superfast broadband", Sept 2017, Ofcom.

[169] 3.132 Wholesale Local Access Market Review: Further consultation on proposed charge control for wholesale standard and superfast broadband", Sept 2017, Ofcom.

563. We estimate Ofcom's forecast BCMR pensions cost is therefore understated by ✂ for 2018/19 which overstates the X by ✂ .

II. Interconnection Service Sub-basket

564. As in the original 2016 BCMR statement, Ofcom have made no specific calculation on the level of X that should apply to the sub-baskets in Condition 9A. In setting the level of X for the Interconnection Services sub basket at the same level of the mail basket, Ofcom is making the assumption that the cost profile for Cablelink and Bulk Transport Link (the interconnection services) is the same as for the basket overall. However we disagree that this is the case.

565. A charge control to seek to glide prices to the appropriate cost standard, which in this case is Fully Allocated Cost (FAC). Our own view is that the price for the Cablelink product no longer covers the direct cost of provisions, let alone any recovery towards fixed and common cost. In pushing down the price of Cablelink below its direct cost Ofcom are distorting the market for backhaul services which these products connect in to. By forcing Openreach to price below direct cost we could also be found to be in breach of Competition Law.

566. We disagree with the CPI-13.5% control on the Interconnection Services sub-cap. Ofcom should calculate the charge controls correctly for the basket of goods in scope.

567. There is a long held approach that if there is an over-performance against the compliance requirements in one period, this can carry forward to the subsequent period. This applies on both baskets and sub baskets in condition 9 of the 23/11/17 statement and in condition 10 of the 2016 BCMR statement. In 2016/17 (the first year under the previous BCMR) Openreach over-complied across the baskets and sub baskets of conditional 10A (Ethernet services up to an including 1G). This reduced the subsequent price reductions required in 2017/18.

568. By resetting the charge control to commence on 1 December 2017, Openreach is losing the benefit of these carry forwards. This means a greater level of reduction needs to be made in this new 16 month control that would have been needed in the same 16 month period under the 2016 BCMR control.

569. Openreach would have proposed to continue condition 10A under the BCMR 2016 under a voluntary agreement. This would have provided the market with the necessary protection and certainty until the 2019 BCMR statement came into effect and is the standard approach to lacuna periods. It also would have avoided the issue raised here.

B. MINIMUM SERVICE LEVELS

570. In Ofcom's 2017 BCMR Statement dated 23 November 2017, without any prior consultation or warning, Ofcom re-imposed quality of service remedies, including MSLs and KPIs, which Ofcom had first imposed on Openreach in the 2016 BCMR.

571. Some changes have been made to these remedies, arising from Ofcom's amendments to the product and geographic market definitions. There is also a revised MSL compliance period of 1 December 2017 to 31 March 2019 inclusive. However, the MSLs and KPIs are largely the same as those imposed in 2016, including the overall MSL framework, the MSL targets and the KPI measures.[170]

572. Ofcom has been aware for some considerable time that Openreach is extremely concerned the targets for two of the MSLs (certainty and upper percentile) are set at levels that it will not be possible for Openreach to meet due to factors that are outside Openreach's control. This is despite significant improvement in the provision of Openreach's services.

[170] The certainty target for the new MSL compliance period is a weighted average of the previous regime's Year 2 and Year 3 targets.

573. Openreach has had for some time new information drawn from the significant operational insight which we have gained since the MSLs were first imposed plus Openreach has sought independent analysis by ✂ to consider the factors that lead to the certainty and upper percentile MSLs not being achievable.

574. In these circumstances, Openreach believes that Ofcom should re-consult and amend the targets for the certainty and upper percentile MSLs. This step is needed to ensure that the MSLs in the remaining compliance period are proportionate and only properly targeted at situations that require intervention.

575. Our specific suggestions are that the certainty MSL target should change to ✂ (from 88%) and the upper percentile MSL should change to no more than ✂ of circuits delivered in more than 118 working days from no more than 3% of circuits delivered in more than 118 working days.

576. These are reasonable proposals and would not in any way weaken the continued incentives on Openreach to deliver high levels of service. Indeed, this request is made in the context of Ethernet service levels that have been transformed by Openreach's improved operational focus and control, and where Openreach has plans and the ambition to deliver further enhancements going forward.

577. Regarding the KPIs, Openreach has a specific concern that the timing of the current KPI obligations as described in the Temporary Conditions Statement cannot be met. This is because Openreach system changes are required in order to support the necessary detailed changes to the KPIs. These system changes (and subsequent testing) cannot be completed in the timescales required by Ofcom. Openreach would like to urgently discuss this matter with Ofcom so that a sensible solution can be agreed that does not leave an unfair risk of non-compliance.

578. ✂

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579. We have commented on the MSLs within the very short timescales allowed to respond to the DFA Consultation and so these observations are provided in a comparatively high-level summary form. Openreach would welcome the opportunity to discuss these matters further with Ofcom, and make more detailed representations.

I. Openreach representations to Ofcom on MSLs

580. As set out below, Openreach has been raising concerns with Ofcom on the feasibility of some of the MSLs since November 2016, and had understood that Ofcom would take onboard the new information which is available in relation to the MSLs.

581. Openreach was, therefore, disappointed and surprised when on 23 November 2017 Ofcom re-imposed the MSLs in largely the same form as those first imposed in April 2016[171] without having first consulted or warned Openreach of its intentions and offering no opportunity for any measured assessment of the new data or the current concerns which Openreach has.

582. Notwithstanding this, Openreach firmly believes that Ofcom should now take the opportunity to consider the new and relevant information which Openreach has available in relation to the MSLs and amend certain of the MSLs.

583. Openreach has raised its concerns about the MSLs with Ofcom on a number of occasions, for example:

a. In two meetings with different Ofcom representatives on 14 November 2016;

[171] See https://www.ofcom.org.uk/consultations-and-statements/category-1/business-connectivity-market-review-2015

b. At a meeting with Ofcom on 14 February 2017;

c. Via an exchange of correspondence between senior Openreach and Ofcom representatives in May 2017;

d. During Ofcom's investigation into Openreach's performance against the previous year 1 (2016/17) MSLs, in which Openreach exceeded 5 out of 6 MSLs but very narrowly missed the upper percentile MSL by 0.18%, Ofcom (correctly in our view) found that it was not appropriate to impose any financial penalty on Openreach, particularly given the narrowness of the miss and the context of greatly improved service that was being delivered by Openreach;

e. Ofcom indicated to Openreach that it wanted discussions on Openreach's concerns in respect of the year 2 and 3 MSLs (2017/18 and 2018/19) to re-commence after at least 6 months of financial year 2017/18 had elapsed, in order for more detailed information on year to date performance in 2017/18 to be available (i.e. from October 2017);

f. A meeting was subsequently organised for 22 November 2017 to discuss these matters but this meeting was cancelled ✂ ; and

g. Despite the imposition of the new MSLs in the Temporary Conditions Statement, Openreach has pressed to continue the dialogue and there has now been a further meeting between Openreach and Ofcom on 19 December 2017.

584. As set out by Openreach in the most recent meeting with Ofcom on 19 December 2017, we consider that the certainty and upper percentile MSL targets need to be revised in order for them to be proportionate and properly targeted, taking account of the new information that is available.

II. Relevant new information on the MSLs

585. The new information which Openreach has gathered throughout 2017 should be considered by Ofcom in the context of the MSLs that Ofcom has imposed in the 2017 BCMR Statement. This information has been gathered from 2 sources: the significant new operational insight that has been gathered by Openreach since the MSLs were imposed in the 2016 BCMR (for the first time in respect of those markets), and from independent analysis undertaken by ✂ .

586. A summary of the principal factors that need to be considered is set out below.

Circuit delivery has become more complex since 2011

587. Openreach's performance in calendar year 2011 was used by Ofcom as the benchmark against which some of the MSLs were set in the 2016 BCMR.[172] This approach has simply been replicated in the MSLs that were imposed by Ofcom on 23 November 2017 in the 2017 BCMR Statement.

588. The appropriateness of this approach relies on the implicit assumption that delivery conditions that exist as at 23 November 2017 are very similar to those that existed in 2011.

589. Openreach has gathered new information showing that this is not the case, and that in fact delivery conditions have become much more challenging since 2011, and from factors that Openreach cannot control. The increased complexity of circuit delivery has then contributed significantly to the new certainty and upper percentile MSLs being unattainable.

[172] Specifically the Mean Time to Provide, Lower and Upper Percentile MSLs.

Figure 3

Changes in underlying delivery conditions

✂

590. As set out in figure 3 ✂ has undertaken analysis into the changes between 2011-17 of the propensity / extent of various factors that, when they occur, affect the level of difficulty of circuit delivery. These factors are: the need for cabling to be built, wayleaves, traffic management, duct activity and geographic geotype (e.g. levels of rurality).

591. Given the way that Ofcom has defined the MSLs, consequential delays arising from all of these factors are wholly on "Openreach's clock" when they occur. In consequence, their prevalence is directly relevant to our ability to meet both the speed and certainty MSLs.

592. The ✂ analysis shows that each of these factors have become more prevalent since 2011, and have a greater impact in general on underlying delivery conditions. In simple terms the prevailing operational headwinds are greater now than they were in 2011 because on average, circuits have more complex (and time consuming) delivery requirements.

593. For example, it is estimated that the impacts of increasing wayleaves alone has effectively increased the Mean Time to Provide ("MTTP") MSL by 2.3 days since 2011 and the upper percentile MSL by 1.4% since 2011.

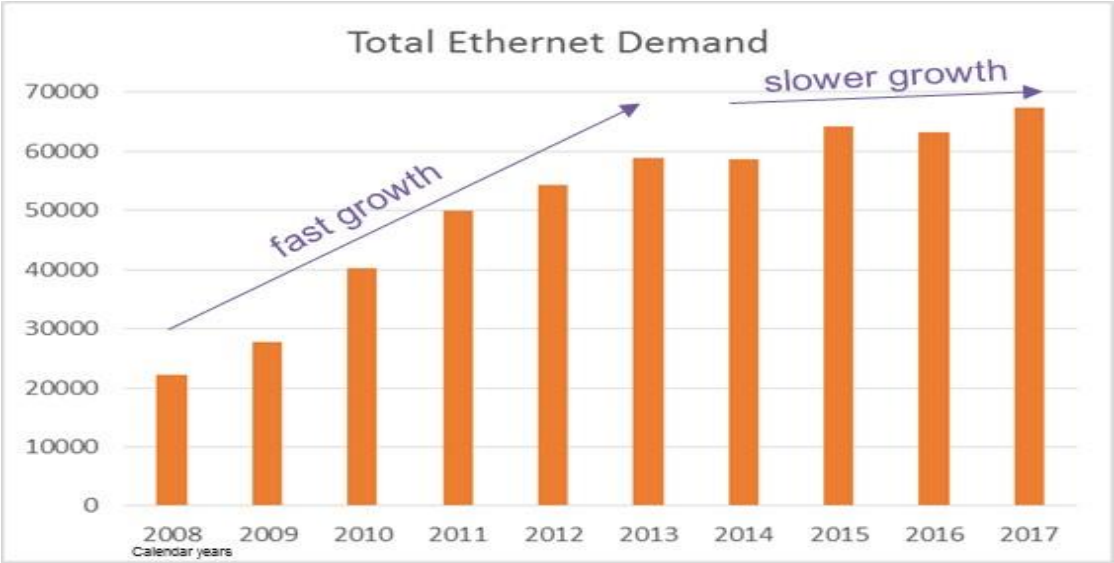
594. The analysis undertaken on this matter suggests a significant impact on the underlying difficulty of the MSLs which Ofcom should review as part of a further consultation into the appropriateness of the scheme imposed in November 2017.

There are issues in using 2011 as an unadjusted benchmark

595. There is a further important difference between market conditions in 2011 and now that Ofcom should take account of. As shown in figure 4 below, there have been significant changes in the demand profile for Ethernet services since 2008.

Figure 4

Ethernet Demand



Source: Openreach analysis

596. In 2011 (the benchmark year for a number of the current MSL targets), the Ethernet market was relatively immature and was in a fast growth phase with high levels of new demand.

597. Now the Ethernet market is more mature and the level of demand growth is far more muted.

598. This is relevant to the current MSLs since as growth in demand slows the composition of completions itself (on which the MSLs are based) is also very likely to change. Specifically, all other things being equal in a more mature market (as we have today), the proportion of <u>older</u> legacy orders (which are likely to have lower levels of performance against the MSLs) will tend to increase.

599. The precise mix of new and old circuits can have a distorting effect on performance. In general, the ability to "recover" from the impacts of clearing down older legacy circuits (which is likely to have a depressing effect on MSL performance) is likely to be more difficult in periods of lower growth in new circuits when the impact of legacy circuit clearance is less diluted by the volume of new circuits (which are likely on average to have better MSL performance, given underlying service improvements over time).

600. The particular problem for Openreach is that the older legacy orders are more likely both to fail the certainty MSL and also to be above the upper percentile MSL. We believe therefore that it would be appropriate for Ofcom to make an adjustment to 2011 data to reflect these effects.

Transitional impacts of clearing down the "tail" to steady-state levels

601. Because the MSLs are set as closed order measures[173] clearing down the oldest / most complex circuits to acceptable levels is likely to depress MSL performance since these types of circuit are likely to have already missed a number of their MSL targets.[174]

602. As set out below (see figure 7 on the Ethernet tails workstack in the 'Ethernet service transformation and moving to an efficient level of operation' section), Openreach has been very

[173] I.e. the circuit's performance counts towards MSL performance once it has been completed.

[174] Typically Mean Time to Provide, Certainty and Upper Percentile MSLs.

successful in driving down the "tail"[175] of aged orders since 2016, and we are now approaching what in our view is the natural floor of the tail workstack of around 1k that is consistent with an efficient level of operation. This exercise has been undertaken as expeditiously as operational conditions have allowed.

603. However, this exercise has taken longer than is implicitly allowed for within the MSL scheme, and because of this, there are some short-term transitional impacts of clearing down the tail that will continue into Q4 2017/18, and that will adversely impact Openreach's ability to meet the MSL targets imposed.

604. In these circumstances, we consider that it is appropriate that Ofcom makes an allowance for the transitional impacts of clearing the residual legacy of tail circuits down to an efficient workstack level.[176] As noted above, we expect this exercise to complete during the course of Q4 2017/18.

III. Proposed changes to the MSLs

605. Given the factors summarised above, Openreach considers that changes are needed to the MSL targets for the certainty and upper percentile MSLs.

Figure 5

Openreach forecasts by MSL

MSL	Target	Y1 Actuals (May 16 to Mar 17)	Y2 (H1) Actuals (Apr 17 to Sep 17)	✂
MTTP	40 Days	60.11	44.60 days	
Lower %	>40% in 29 days	50.32%	58.44%	
Upper %	<3% in 118 days	13.85%	8.37%	
Certainty	88%	73.23%	76.01%	
iCDD MTTP ("Cross-link")	55 days	55.59	47.90 days	
Repair	94%	94.36%	95.42%	

Source: Openreach

606. As set out in figure 5, Openreach is forecasting to exceed in the new compliance period the MTTP, lower percentile, "crosslink" and repair MSLs.

607. Figure 5 also shows that performance against all of the MSLs has continued to improve over time.

608. However, despite continued improvement, we are forecasting to miss the certainty and upper percentile MSLs due to factors that are outside of our control.

609. In these circumstances, and on the assumption that it would be more pragmatic and less intrusive (at least in the short term) to adjust the relevant MSL targets, without changing the inherent structure of the overall MSL scheme, Openreach proposes the following changes to the MSLs to

[175] Tail in this context is defined as circuits that are greater than 118 working days old and that remain in the course of delivery.

[176] No such allowance is provided for in Ofcom's Temporary Conditions Statement.

cover the period December 2017 to March 2019 inclusive:

a. Certainty MSL target to change from 88% to ✂; and

b. Upper percentile MSL target to change from no more than 3% of circuits delivered in more than 118 working days, to no more than ✂ of circuits delivered in more than 118 working days.

610. As minimum standards (that Openreach will aim to exceed), it is appropriate and proportionate to set the revised targets ✂ , as set out in Figure 5 above.

IV. Ethernet service transformation and moving to an efficient level of operation

611. Openreach's request for Ofcom to amend the certainty and upper percentile MSLs is made against a backdrop of transformed Ethernet service, with further improvements in train.

612. Over the last 2 years, Openreach has delivered significant and systematic improvements to Ethernet service. This has been based on a series of initiatives including: improved management focus, increased investment in service delivery, better customer engagement plus transformation of our delivery organisation and the processes it uses.

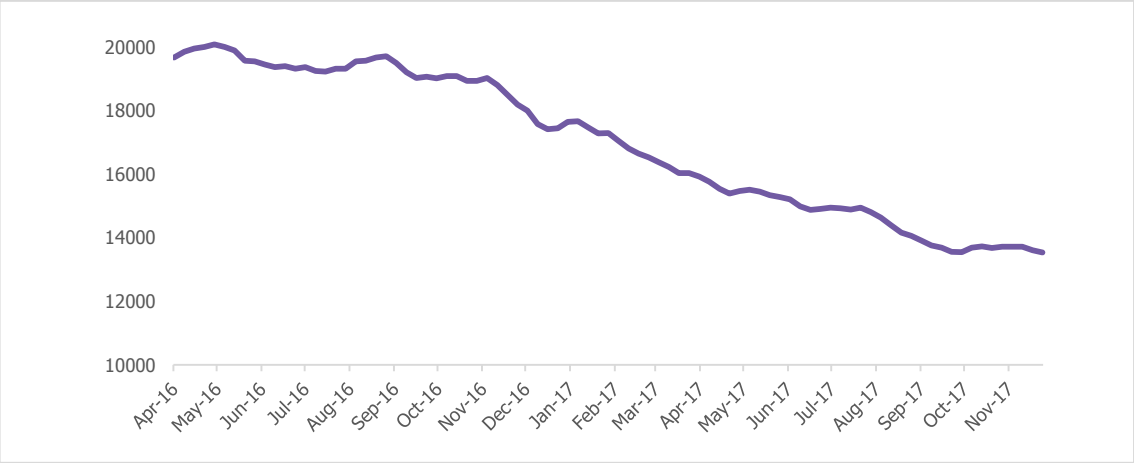
613. Ofcom itself has recognised the improvements made by Openreach, for example commenting in the 96C decision following its investigation into the year 1 (2016/17) MSLs that "..*Openreach has made progress in implementing changes in order to comply with the quality of service requirements imposed in the 2016 BCMR and that these have objectively improved performance and positively impacted its customers' experience*."[177]

614. The significant improvements made by Openreach have also been reflected in much improved results from Communication Provider (CP) satisfaction surveys, ✂ .[178]

615. The significance of the improvements that have been delivered to service are reflected in a number of metrics, as described below.

Figure 6

Ethernet provision workstack



Source: Openreach

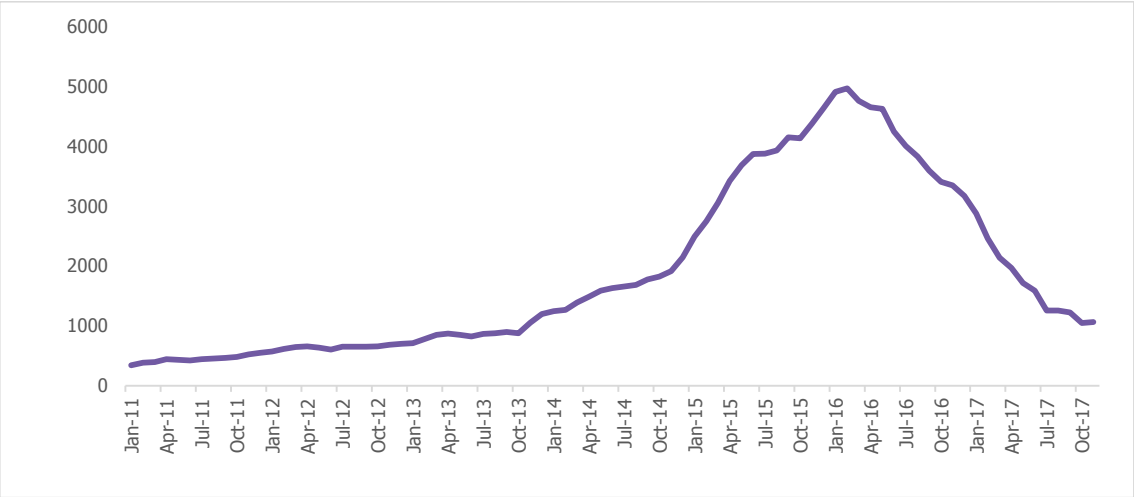
[177] See https://www.ofcom.org.uk/__data/assets/pdf_file/0028/105697/BT-Ethernet-QoS.pdf Page 14, paragraph 4.17

[178] ✂

616. As set out in figure 6, Openreach has dramatically reduced the size of the total Ethernet provision workstack from over 20k, to current levels of around 13.5k. We consider that the workstack is now consistent with a steady-state efficient level of operation.

Figure 7

Ethernet tails workstack



Source: Openreach

617. As shown in figure 7, Openreach has also focused on delivering the more complex, older circuits too. The size of orders within the "tail" workstack has also been significantly reduced from around 5k to currently just over 1k. Given the natural "thickening" of the tail since 2011 due to the increase in circuit complexity (as summarised above), we are now also approaching an efficient steady-state level for the tail workstack.

618. Openreach has delivered a number of other improvements, including:

a. Reducing the average age of the overall provision workstack from around 80 working days in April 2016 to around 45 working days now;

b. Improving our circuit throughput capacity year on year; and

c. Reducing dependencies such a traffic management and remedial civils workstacks.

619. Going forward, Openreach retains an ambition to continue to improve service levels. In particular, we will maintain the improvements already achieved, whilst improving other areas such as quality of delivery and workmanship. We also remain committed to further improving our customer engagement and the degree of accountability at all levels within the delivery teams.

620. The significant improvements that have been delivered to Ethernet service, and the greater operational insight that has been gained since the MSLs were first imposed in 2016 demonstrate that:

a. Openreach has embraced the challenge of meeting the MSLs (without being wholly defined solely by reference to them).

b. Some of the MSLs are set beyond target levels consistent with an efficient level of operation.

c. Ofcom's use of emergency powers to avoid any consultation is, in this context, deeply troubling. Ofcom is well aware that Openreach service has been radically improving over recent years, and it is simply not credible to argue that Openreach service quality would have deteriorated had Ofcom not intervened in the way it did in the 2017 BCMR Statement.

d. Openreach has consistently demonstrated that it will not "game" the MSLs in order to achieve the targets at the expense of longer term improvement to service (for example by cherry picking easier orders in order to hit the upper percentile MSL). In any event such conduct would almost certainly be taken into account by Ofcom in its 2019 BCMR process, which Openreach would strongly want to avoid. Given this it is again deeply troubling that Ofcom should consider it needed to use emergency powers to avoid thereby any consultation.

621. In this context, Openreach isn't seeking any slackening of the regulatory incentives that are placed upon it. Instead we are seeking for some proportionate adjustments to be made that recognise new information that shows that some of the MSL targets cannot be hit due to factors outside of Openreach's control.

V. Comments on Quality of Service KPIs

622. Openreach has some concerns with the Quality of Service KPI requirements set out in Ofcom's 2017 BCMR Statement.

623. Specifically, Ofcom has not allowed a sufficient time period to implement the changes in Openreach that are required to deliver the new KPIs, given the changes which Ofcom has made to the product and geographic markets.

624. The new KPIs will require Openreach to deliver a set of changes to its strategic analytic system, and there has been insufficient time provided for the relevant system development to be undertaken. The changes made by Ofcom require a significant amount of detailed work to be undertaken, then tested, and this is likely to take a number of months to implement.

625. Openreach has set out to Ofcom previously[179] that the process involved in either building or amending an existing KPI report requires a system change process, which can take several months to complete due to the technical changes required. In order to change a strategic Openreach system there are specific requirements that must be followed, which covers changes required by people, process, systems and / or network changes. There are several necessary elements to this process, and we estimate that this kind of system change takes around 3 months on average.

626. In addition to this process, the system change process is also impacted by a Christmas system change embargo which runs from mid-December to mid-January. This is a BT-wide embargo to protect service over the seasonal break, where no IT changes take place.

627. Due to the lack of sufficient notice in the changes to the KPI requirements requiring a system change, coupled with an imminent system change embargo, we do not believe that it will be possible to meet the timescales set out, where Ofcom requires that the first relevant month of December 2017 is reported on the 15th working day of the next relevant month, i.e. by 22 January 2018.

628. Given these circumstances, it would be inappropriate and disproportionate for Openreach to be penalised in circumstances where it was unable to meet a requirement based on a wholly unrealistic timescale.

629. Openreach considers that it should be possible to find a sensible way through this problem, and would like to work with Ofcom in order to agree a realistic (and later) implementation timescale.

630. Openreach would welcome further engagement with Ofcom on this matter in the New Year so that a mutually acceptable solution can be found.

[179] For example, in a meeting with Ofcom on 6 November 2015.

C. REGULATORY ACCOUNTING OBLIGATIONS

631. At paragraph 3.69 of the 2017 BCMR Statement, Ofcom notes that it has decided to require BT to provide information to it privately on costs and revenues on VHB CISBO services to the same level of granularity as specified in the 2016 BCMR Statement and by the same geographic market groupings as defined in the 2017 Statement in relation to Lower Bandwidth CISBO services.

632. We note that Ofcom has not found that BT has SMP in the VHB market. As such, it has no legal power to give a Direction under an SMP Condition requiring BT to provide this information and we assume this requirement was imposed in error.[180] We request that Ofcom remove this requirement from its regulatory reporting directions.

633. To the extent this information is necessary and proportionate to enable it to carry out its functions, we are happy to discuss with Ofcom through what other mechanism this information could be provided.

[180] Ofcom only has the legal power to set SMP conditions or give directions under an SMP Condition under section 45 and 46 of the Communications Act 2003 where Ofcom has determined that that person has SMP in a specific market.

7 Legal Instruments

634. In this Section we set out our comments on the final legal instrument in the 2017 BCMR Statement and the draft legal instrument in the DFA Consultation in so far as they have not been commented on elsewhere in this consultation response.

A. DFA LEGAL INSTRUMENT

635. Our comments on the draft DFA Legal Instrument are without prejudice to our substance objections to the imposition of a new DFA remedy as set out in the rest of this response.

Table 10

Openreach Comments on DFA Legal Instrument

Condition/Section/Page	Comment
2.1(b)	Insert at the end of the clause "*but only in so far as it is to be used to provide services of up to 1Gbit/s*". Such an amendment is necessary to give legal effect to Ofcom's intention that there will be no regulatory obligation on BT to supply dark fibre to be used to supply VHB CISBO services.
Insert new Condition 2.6	Insert new Condition 2.6 to provide that "*Condition 2.1(b) shall enter into force on 1 July 2018*"[181]
Insert new Condition 2.7	Insert new Condition 2.7 to provide that "*For the avoidance of doubt, nothing shall require the Dominant Provider to provide Dark Fibre Access network access under Condition 2.1(b) for the purposes of core conveyance or for bandwidth above 1Gbit/s*".
2.2	For clarity suggest defining "corresponding service" to "corresponding 1G EAD Service or 1G EAD LA Service or Main Link Service (or such other services as Ofcom may direct from time to time).
9E.2	As set out at paragraphs 484 to 489 above, we do not consider that requiring BT to provide a dual fibre dark fibre product is appropriate or proportionate for Lower Bandwidth CISBO services and therefore consider that condition 9E.2 should be deleted.
Annex 2, 1.3	We agree with Ofcom's proposal to prepare and deliver the additional financial information as per section 1.3. We note that to the extent Ofcom proposes to replicate the wording used at 5(b)(iii) of Annex B of the Schedule to the Direction setting the requirements in relation to preparation, delivery, publication, form and content of the Regulatory Financial Statements made under Condition 11.4 of the 2016 BCMR Legal Instrument (see page 282), the words "active service" were missing from the end of point 4.

[181] Note, as set out at section 5.D.II above, due to the practicalities involved in launching dark fibre, Openreach will be unable to launch a new dark fibre product until at the earliest July 2017 and has drafted the proposed amendment accordingly. In any case, an amendment should be inserted to provide for the entry into force of the dark fibre remedy, given that without this under clause 4.2 of Section 1 of the Legal Instrument, the requirement to provide dark fibre access would come into force on the date of publication of the notice. This is not the intention of Ofcom as set out at paragraph 3.57 of the DFA Consultation.

B. LLCC LEGAL INSTRUMENT

Table 10

Openreach Comments on DFA Legal Instrument

Condition/Section/Page	Comment
General	Definition is needed for "SMP".
Table A under paragraph 10	For consistency and clarity a row should be added to Table A to note that Ofcom has not found that BT has SMP within the CLA.
9A.4(i)	Insert space between "13.50" and "percentage".
9A.18(ii)	Erroneous paragraph inserted. Suggest this line should be moved to the end of 9A.18(ii) and 9A.18(iv)-(ix) be re-numbered accordingly.
9A.21, Definition of "CPI"	Amend "2.8" to "3" as agreed between Viv Steup, Openreach and Georgi Pojarliev, Ofcom, in an email from Mr Pojarliev on 24 November 2017 at 9.57am.
9A.21, Definition of "Prior Financial Year"	Insert ";" at the end of the clause.
9A.21, Definition of "Relevant Period Weighted Average Charge"	At the end of the definition insert "*or 9A.11 as appropriate*".
Section 3 of the Annex to Condition 9A	There are a number of errors in the description of the Main Link Sub-basket: • The "WES/WEES Main Link charges" should specify "up to 1Gbit/s". • "WES Aggregation distance charges per metre or part thereof (spoke)" is missing • ""WES Aggregation distance charges between exchanges (aggregation link) per metre or part thereof" is missing • The "BES mainlink connection and rental charges" should specify the price list entry of "mainlink per metre or part thereof – up to and including 1Gbit/s" to restrict the condition to the services in scope of SMP.
9B.9, Definition of "CPI"	Amend "2.8" to "3" as agreed between Viv Steup, Openreach and Georgi Pojarliev, Ofcom, in an email from Mr Pojarliev on 24 November 2017 at 9.57am.
9C.14, Definition of "CPI"	Amend "2.8" to "3" as agreed between Viv Steup, Openreach and Georgi Pojarliev, Ofcom, in an email from Mr Pojarliev on 24

Condition/Section/Page	Comment
	November 2017 at 9.57am.
9D.3	"Relevant Year" should be "Relevant Period".
Page 141	This page shows a compliance statement that is specific to TISBO and is not relevant for this statement. It should therefore be deleted.
Schedule 11 – References to "Markets" or "Market"	There are multiple references throughout this section to "Market". "Markets" is not a defined term and these references should be replaced with "Business Connectivity Markets, which is defined at the start of the Schedule. Where reference is made to "each individual Market", we suggest that the formulation "*each individual SMP market to which cost accounting and/or accounting separation obligations apply*" be used to confirm that the obligations set under the Direction extend only to those markets in which Ofcom has found BT to have SMP.
Schedule 11 – References to "network components"	We assume that given that references to "network components" are not capitalized in Schedule 11 (i.e. are not to the defined term "Network Components", BT has flexibility to introduce new network components (beyond those listed at Schedule 12) as appropriate in its reporting. If this is not the case, please let us know so that we can discuss further.
Schedule 11, Annex B, Section of table headed "Additional financial information in respect of Business Connectivity Markets and business connectivity services above 1Gbit/s"	As above, Ofcom has not found that BT has SMP in the supply of VHB services. As such, it has no legal power to give a Direction under an SMP Condition requiring BT to provide this information. We request that Ofcom remove this requirement. To the extent this information is necessary and proportionate to enable it to carry out its functions, we are happy to discuss with Ofcom through what other mechanism this information could be provided.
Schedule 12	Schedule 12 does not actually contain a Direction setting out the purpose of the list of network components.

Annex A – Comments on Ofcom's assessment of the benefits of equipment cost savings

A. BACKGROUND

1. This Annex reviews the basis of Ofcom's assertions at paragraphs 4.11-4.29 and Annex 5 of the DFA Consultation that as stated at paragraph 4.38 there are 'substantive cost saving opportunities, not just to customers but to the network as a whole'.

2. Ofcom bases its new estimate of the cost savings achievable from the adoption of a dark fibre remedy on Openreach's final Reference Offer (RO) dated 1 December 2016 and then updates this forward to 2017/18 costs, recognising that the 2016/17 costs are now out of date.

3. We show below that there are serious problems in relying on the regulatory accounts to identify cost savings available from adoption of the dark fibre remedy. Further, rather than estimate the cost savings directly on a bottom-up build basis, which is undoubtedly possible given the main cost savings are considered to be "box savings", Ofcom has chosen an indirect approach, mixing data based on BT's Regulatory Financial Statements with a bottom-up calculation of additional engineering costs required to maintain a dark fibre network.

4. The largest component of these cost savings arises from the "Ethernet Electronics" component, which Ofcom has included by using a LRIC output from BT's regulatory costing system. This approach suffers from a number of shortcomings, which overstates the potential for cost savings:

   a. The Ethernet Electronics component is a blended component across all bandwidths, and so is unsuitable for estimated direct cost savings at a specific bandwidth and in this case the restriction to Lower Bandwidth CISBO services.

   b. Indirect costs and overheads have wrongly been included in the estimate of cost savings and these will not be saved in a decremental situation even in the long run.

   c. The component's assets are valued at Historic Cost but equipment costs have reduced significantly in recent years, meaning that the cost savings have been overestimated taking a forward-looking view.

5. Ofcom assumes that two boxes per circuit are typically saved: in reality at the 1G level, in many cases only one box is saved per circuit, reducing the benefits substantially. (The issue of the scenarios is a question in the DFA Consultation.) These issues are examined in more detail below.

B. CRITIQUE OF OFCOM'S TOP DOWN APPROACH

6. The Ethernet Electronics component blends costs of Ethernet and Optical electronics and serves all bandwidths, not just the 1G services. The Regulatory Accounting System then allocates these costs to services, requiring a high degree of aggregation before the subsequent allocation to services. This means there is inevitably a larger margin of error compared with a more granular costing approach that could be adopted. A top-down approach may be appropriate for indicative prices that are attributable to an allocation of average costs for dark fibre used at all bandwidths, but is not appropriate where the dark fibre is to be used solely for 1G circuits in a situation of decrement.

Table A.1

Allocation of Ethernet Electronics components to services 2016/17

Service Description	%
Optical Services Rentals Rest of UK - Internal	✂
Optical Services Rentals Rest of UK- External	✂
EAD LA 100M Rentals Rest of UK - Internal	✂
EAD LA 100M Rentals Rest of UK - External	✂
EAD 1G Rentals Rest of UK- Internal	✂
EAD LA 1G Rentals Rest of UK - Internal	✂
EAD 100M Rentals Rest of UK - Internal	✂
EAD 100M Rentals Rest of UK - External	✂
EAD 1G Rentals Rest of UK - External	✂
EAD LA 10M Rentals Rest of UK - Internal	✂
Optical Services Rentals Central London Area - Internal	✂
EAD LA 100M Rentals - Internal - Central London Area	✂
EAD LA 100M Rentals Central London Area - External	✂
EAD 10M Rentals Rest of UK - Internal	✂
Optical Services Rentals London Periphery - Internal	✂
BES 1G Rentals Rest of UK - External	✂
EAD LA 1G Rentals Rest of UK - External	✂
WES 10M Rentals Rest of UK - External	✂
WES 100M Rentals Rest of UK - Internal	✂
EAD 10G Rentals Rest of UK - Internal	✂
WES 100M Rentals Rest of UK - External	✂
WES 10M Rentals Rest of UK - Internal	✂
EAD LA 10M Rentals Rest of UK - External	✂
EAD 10M Rentals Rest of UK- External	✂
EAD LA 100M Rentals London Periphery - Internal	✂
WES 1G Rentals Rest of UK - Internal	✂
Optical Services Rentals Central London Area - External	✂
WES 1G Rentals Rest of UK - External	✂
EAD 100M Rentals Central London Area - External	✂
Other Ethernet services > 1G Rental-Internal Central London Area	✂
EAD LA 1G Rentals - Internal - Central London Area	✂
WES >1G Rentals Rest of UK - Internal	✂
EAD LA 100M Rentals London Periphery - External	✂
75 other services	✂
Total	100.00%

Source: BT RFS

7. Table A.1 shows that the Ethernet Electronics component allocates costs to a very wide range of services at different bandwidths and in different geographies. The component includes not just direct costs, but a large number of indirect costs which are overheads and common costs.

8. The LRIC here is an estimate of the cost avoided if the component were not provided at all – a situation where there was no Ethernet services provided at all and this is clearly not the situation that will occur in a dark fibre world where Openreach will sell dark fibre alongside active products.

9. Table A.2 below shows the breakdown of the EAD 1G cost attributable to the Ethernet Electronics Component.

Table A.2

Analysis of unit cost of EAD 1G cost of Ethernet Electronics Component

Average for the year 2016/17

Sector Description	Unit FAC £	Unit LRIC £	%
P Ccts & SMDS	✂	✂	✂
Gen Mgnt & Other	✂	✂	✂
Accommodation	✂	✂	✂
Plant Support	✂	✂	✂
Planning & Dev	✂	✂	✂
Transport	✂	✂	✂
Software	✂	✂	✂
Personnel & Admin	✂	✂	✂
Maintenance	✂	✂	✂
Other	✂	✂	✂
Total for EAD 1G LA circuit	✂	✂	100%

Source: BT RFS

10. Table A.2 above shows that only ✂ of the cost of the Ethernet Electronics component amounts to direct capital cost. The remaining costs are allocated overheads, and therefore not strictly relevant for assessing the savings attributable to dark fibre, even if calculated on an LRIC basis.

C. APPROPRIATE VALUE OF EQUIPMENT COSTS

11. The Ethernet Electronics capital costs are valued on a Historical Cost basis. This means that the values in the regulatory financial statements reflect the historical cost of buying boxes. The cost of Ethernet "Adva" boxes has reduced substantially over time, meaning that the values in the Ethernet Electronics component are at a higher cost than would be faced by an operator buying an Adva box in today's market.

12. This is significant because it will lead to the over-estimation of potential cost savings if the regulatory financial statements are used to quantify potential efficiency savings. Table A.3 provides information on the trend in equipment costs needed to provide an EAD 1G LA service. The weighted average assumes that the volume of equipment bought each year is the same.

Table A.3

Average equipment cost for LA 1G service

Financial year	EAD 1G LA £	Price index
2011/12	✂	✂
2012/13	✂	✂
2013/14	✂	✂
2014/15	✂	✂
2015/16	✂	✂
2016/17	✂	✂
2017/18	✂	✂
weighted average		✂

Source: BT internal evidence from suppliers

13. This illustrates that the capital cost on a historic cost basis could be over 30% higher than the cost of buying the same boxes now under BT's purchase contract.

14. The top-down cost estimate should therefore incorporate two adjustments: first the Ethernet Electronics cost component should only include the capital costs. Second, the costs should be adjusted to reflect the current equipment costs that alternative operators would face. This will reduce the 2016/17 costs from £535 per unit (Ofcom A5.15] to ✂ (being ✂ of £535 to reflect the proportion of the Ethernet electronics component attributable to the electronic equipment). The ✂ cost should then be reduced by ✂ . This gives a total cost saving of ✂ per circuit – assuming a two-box cost saving.

15. The adjusted top-down cost basis can then be compared with a bottom-up cost build to cross reference the reliability of this adjusted cost estimate

D. AN ALTERNATIVE BOTTOM-UP COST BUILD

16. Table A.4 shows the equipment needed for a two box scenario.

Table A.4

Equipment used to provide a 1G Service

At BT site	21CN 4 Channel NTU Hub unit
At CP site	F150/ADV/CP/GIG/2AC (FBT-ORNT-11-B)
x2	FSP150CP - BT Fibre 16km (FBT-SFP-10)
x2	1G (route distance max 16km) FBT-SFP-05
Include chassis overhead @ ✂utilisation	F150/CM/BT/KT/CH-4U/2DC/NEMI

Source: Openreach and BT analysis

17. It is appropriate to assume a saving of two boxes per circuit where boxes link two CP sites together or where one of the sites already has transmission equipment at it, for example in the case of a MEAS mobile backhaul circuit. In many other cases, where one end of the circuit is at an end-customer and the other end is at a network node, then only one box per circuit will be saved. This is particularly the case for 1G services. If the equipment links two end-customer sites, such as two branch offices, it is likely there will be no box savings at all, with a pair of Openreach boxes needing replacement by a pair of CP boxes.

18. Table A.5 below shows the different scenarios and the equipment cost saving per circuit.

Table A.5

Analysis of equipment cost savings in Ofcom's scenarios

Scenario 1a Active	Equipment Required	Scenario 1b Dark Fibre	Equipment Required	Cost Saving	Comments
	2 Openreach devices 4 Openreach optics 2 Provider devices 2 Provider optics		2 Provider devices 2 Provider optics	2 devices 4 optics	Openreach and Provider both have field forces already
Scenario 2a Active	**Equipment Required**	**Scenario 2b Dark Fibre**	**Equipment Required**	**Cost Saving**	**Comments**
	2 Openreach devices 4 Openreach optics 1 Providers device 1 Provider Optic 1 Customer device 1 Customer Optic		1 Provider device 1 Provider optic 1 End Customer Device 1 End customer optic	2 devices 4 optics	Interworking is a challenge depending on variety of optics options and eqpt types. Faulting challenging
		Scenario 2c dark Fibre	**Equipment Required**	**Cost saving**	**Comments**
			2 Provider devices 3 Provider optics 1 End Customer Device 1 End customer optic	1 device, 2 optics	Provider adds equipment so end up with 3 network elements instead of 2. Now need a field force to deploy and maintain the provider device at customer end
Scenario 3a Active	**Equipment**	**Scenario 3b Dark Fibre**	**Equipment Required**	**Cost Saving**	**Comments**
	2 Openreach devices, 4 Openreach optics 2 End Customer devices 2 Customer Optics		2 End Customer devices, 2 Customer Optics	2 devices, 4 optics	In 3a the provider needs no field force as they have no equipment. In 3b they either rely on customer to correctly fault or Openreach or they have to deploy a field force to do on behalf of

					customer if they are not just going to call Openreach out
		Scenario 3c Dark Fibre	**Equipment Required**	**Cost Saving**	**Comments**
			2 Provider devices, 4 Provider optics 2 End Customer devices 2 Customer Optics	None	In 3a the provider needs no field force as they have no equipment. In 3c they need a field force to install and repair their devices which have been introduced

Source: Openreach and BT analysis

19. We have used two data sources to estimate the proportion of circuits that would deliver 1-box and 2-box cost savings. Table A.6 below uses data from BT's downstream divisions whilst Table A.7 uses an analysis of Openreach circuits with the former included in the latter.

Table A.6

BT Downstream service volumes (volume sample during Q1 2017)

Service	Number of Circuits	Scenario	Percentage
GS SHDS	✂	✂	✂
MEAS Mobile Backhaul	✂	✂	✂
BT Wholesale Fixed Ethernet	✂	✂	✂
GS IP Connect UK	✂	✂	✂
Ethernet Connect UK	✂	✂	✂

Source: BT Downstream

20. Table A.6 shows the mix of BT's downstream businesses and of 1G services, ✂ of circuits will have no cost savings, ✂ will have two-box savings, whilst ✂ would result in a one-box saving if the circuits were to migrate to dark fibre.

21. Table A.7 provides the Openreach equivalent information of Openreach volumes, showing nature of the network nodes and customer sites linked by the Ethernet circuits.

Table A.7

Openreach service volumes (volume sample during Q1 2017)

RSS End of January 2017 GB	Total	Node to Node	Node to Site	Site to Site
EAD	✂	✂	✂	✂
Adjustment for MEAS		✂	✂	
Revised Volumes		✂	✂	✂
%		✂	✂	✂

Source: Openreach

22. Table A.7 shows node to node links, typically connecting two elements of a network and so may enable a two-box savings to be made in a dark fibre scenario. MEAS is considered to link a customer site to BT's network and volumes are assumed to be included in the Node to Site volumes. An adjustment is included to show MEAS volumes in the Node to Node volumes so as to reflect the potential for two-box savings.

23. These proportions are similar to the table based on BT Downstream services, which shows that only ✂ of Ethernet Services are likely to enable a two-box saving, whilst ✂ would be expected to enable a one-box saving should the services migrate to dark fibre. The fact that so many Ethernet circuits are likely to result in a one-box cost savings fundamentally changes the economics of Ofcom's assessment of the net benefits of a dark fibre remedy restricted to Lower Bandwidth CISBO services.

E. QUANTIFICATION OF BOTTOM-UP CAPITAL BOX SAVINGS (ASSUMING SINGLE FIBRE WORKING)

24. Table A.8 brings together the relevant information.

Table A.8

Bottom up estimate of Dark Fibre equipment savings

	Equipment	Price at Apr 2018	Openreach 1G active circuit		2-Box saving (1b)	1-Box saving (2c)
		£	Openreach Cost	CP Cost	CP Cost	CP Cost
Customer Site (B-End)	CP Customer Equipment	n/a		Yes	Yes	Yes
	FSP Link to NTE	✂	Yes			Yes
	Customer Site NTE CPMR 1U NTE - No Mg'ment card	✂	Yes			Yes
	Long Range Optical Interface FBT-SFP -07	✂	Yes		Yes	Yes
At the Network Site (A-end)						
	Long Rang Optical Interface FBT-SFP-08	✂	Yes		Yes	Yes
Openreach chassis assuming ✂ utilisation	F150/CM/BT/KT/CH-4U/2DC/NEMI	✂	Yes			
Openreach Network Card	2 port 10/100/1000 Ethernet NTU Service Card	✂	Yes			
	FSP Link to CP equipment	✂	Yes			
CP Active Configuration	CP equipment CPMR 1U NTE - No Mg'ment card	✂		Yes		
CP Dark Fibre Configuration	CP equipment CPMR 1U NTE – Mg'ment card	✂			Yes[182]	Yes
Installation and Configuration	NTE fit and test cost	✂	Yes		Yes	Yes
	Active Cost		✂ (A)	✂ (B)		
	Dark Fibre Cost				✂ (C)	✂ (D)

[182] The on-cost for the management card may not be required under all circumstances at maximum the ✂ would rise by about ✂ . This may also apply to the one-box solution Scenario 2c.

	Equipment	Price at Apr 2018	Openreach 1G active circuit		2-Box saving (1b)	1-Box saving (2c)
		£	Openreach Cost	CP Cost	CP Cost	CP Cost
	Dark Fibre Equipment Capital Cost Differential				✂ (C-A-B)	✂ (D-A-B)
	Add SFP costs incl'd in stage 3				✂	✂
	Capital Cost differential at Stage 1				✂	✂
	Annuitised Value (10% WACC and 6 year life) – Saving of taking DFA		✂		✂	✂
	Operating costs and maintenance at ✂ of capital value	£/ annum	✂			
	Total Annual cost		✂			

25. Table A.8 shows that equipment used to link equipment at a customer site through to the CP network equipment. Three scenarios are shown – an active 1G service provided to a CP where we show Openreach costs in one column and CP costs in a second column. We then show a scenario with a two-box saving consistent with scenario 1b in the Consultation; this shows the Openreach equipment being replaced with a long range CP optical interface and the NTE at the A-end being changed to a management-capable card. The final column shows a 1-box saving scenario consistent with Scenario 2c, where the CP needs to provide an NTE box at the customer site, as well as the optical interfaces and upgrading the A-end equipment to a management-capable card.

26. It is important to note that all the costs used in Table A.8 are based on the prices BT pay under its ADVA contract. It is likely that CPs will need to pay a higher price for the equipment as their purchase volumes may not achieve the same level of discount as BT.

27. The capital cost differential is calculated as the difference between the equipment cost faced by the CP in the one- or two-box saving scenario less the total of the CP and Openreach equipment costs incurred where an Active product is provided. This figure is then adjusted to remove the cost of the optical interfaces required by CPs in the dark fibre scenario as Ofcom has already included these costs within Stage 3 of the calculations.

28. Table A.8 shows that the annual value of the capital cost saving is around ✂ for a two-box saving and ✂ for a one-box saving. After the additional cost of the management of the circuits is taken into account estimated by Ofcom (at section A5.24 of the DFA Consultation) at £113 per circuit, any box saving is more than offset by the additional circuit management costs in both the two-box and single-box scenarios. This shows that the use of dark fibre is uneconomic for the provision of services at a 1G bandwidth.

F. CONCLUSIONS

29. Our adjusted top-down analysis shows an average cost saving of ✂ per circuit based on a two-box saving whilst the bottom-up build gives an average saving of ✂ per circuit (based on an annualised cost at a 10% WACC and assuming a six-year asset life). Once additional costs facing CPs due to the cost of installing and configuring optical interfaces and the higher cost of NTE with management cards are taken into account, the cost savings reduce to around ✂ per annum in a two-box scenario and ✂ per annum in a single-box scenario.[183] This is prior to any allowance for engineering costs or the

[183] Note the footnote at the bottom of Table A.8 in this regard. A slightly higher saving would not affect the broad conclusions drawn here.

impact on fault repair costs; Ofcom has an offset of around £113 per circuit which suggests there will no saving at all. This shows Ofcom's Table 4.1 figure of £400 savings per circuit is completely unrealistic.

30. When the fact that around ✂ of 1G circuits will only save one box is taken into account where there will be no cost savings according to our estimates of box savings and Ofcom's conservative cost of higher maintenance to CPs, the economic basis for a dark fibre remedy set out in Ofcom's consultation is very seriously undermined and the assertions of substantive cost savings is wrong.

Annex B - The implications for fault repair of DFA

1. In this Annex we describe what happens when it is not clear whether a fault resides on Openreach fibre infrastructure or on the CP side and therefore which field force (CP or Openreach) should be dispatched. In doing so we do not consider any faults that could be unambiguously determined remotely by the CP although we have considerable doubts as to how this will now work.

2. Assuming over a period of time across the base of deployed dark fibre circuits the number of such faults in the Openreach domain is NOR (N Openreach) and those in CP domain is NCP (N Communication Provider) and the total number of faults that should result in field dispatches is N = NOR + NCP.

3. Then the following holds:

   a. The strategy of always dispatching a CP technician first results in N+ NOR callouts (NCP necessary visits by the CP to fix CP faults, NOR unnecessary visits by the CP which conclude problem is on Openreach side, and NOR visits by Openreach to fix faults) ;

   b. The strategy of a CP requesting Openreach dispatches a technician first results in N+ NCP callouts (NOR necessary visits by Openreach to fix Openreach faults, NCP unnecessary visits by Openreach, and NCP visits by the CP to fix faults);

   c. The optimum number of callouts is N if the fault location is unambiguously known and the correct party is dispatched. However, as discussed there are circumstances where this is not possible where the location and type of fault cannot be determined remotely. Examples of these are discussed in the BT witness statement to the CAT.

4. If NOR > NCP then the overall number of visits is minimised if Openreach is dispatched first, (carrying out N visits), but this will also result in charges for NCP visits from Openreach (Right When Tested charges) followed by NCP visits by the CP.

5. At some level it is therefore more effective for the CP to pay charges to Openreach for NCP visits than it is to pay for its own engineers to first attend (N-NCP) visits. Such a strategy may be efficient for the CP but results in NCP unnecessary visits by Openreach.

6. If NCP > NOR then the number of visits is minimised if the CP dispatches first and avoids the need to pay Openreach any Right When Tested charges. However the CP has to dispatch N times followed by NOR to get this outcome.

7. If NCP = NOR then, regardless of who is dispatched first, 50% of these dispatches will result in the other party being subsequently called out.

8. The cost to the CP can be modelled using the following, the total number of faults, N, the % of N faults that are NCP, the % that are NOR and average cost of a callout for the CP and the Openreach charge for Right When Tested visits.

9. A simple model is provided where the variables can be modified in the attached spreadsheet.

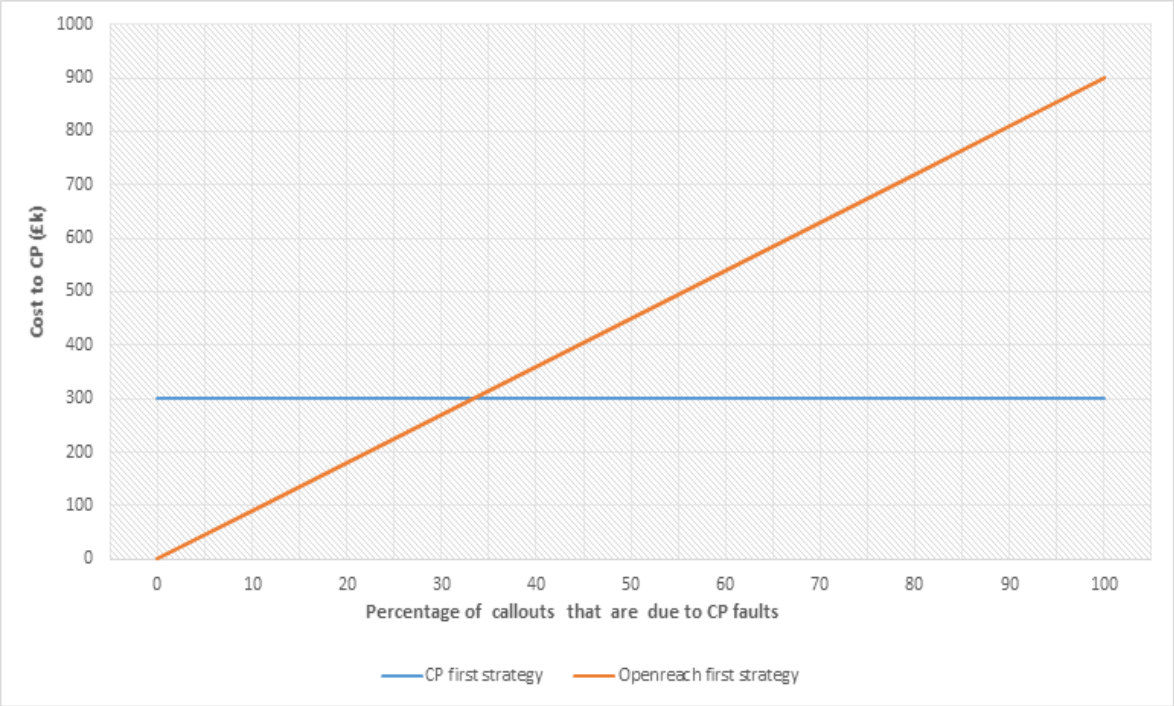
Fault_Visits.xlsx

10. An example is provided in Figure B.1 below assuming N equal to 1000 and a RWT callout charge from Openreach of £599.[184] The cost to the CP when it requests that Openreach dispatch first includes the cost of the RWT charge from Openreach and the subsequent CP visit to fix its fault.

[184] This was the charge shown in the Openreach document "Dark Fibre Access (DFA) Final Reference Offer – Pricing", December 2016, section 5.

Figure B.1

Trade-off for CPs sending out an engineer



Source: Openreach analysis

11. In this example it is evident that if NCP < 30% of N there is an incentive for the CP to dispatch Openreach engineers first even if almost 1 in 3 Openreach visits finds the fault to be on the CP side. Indeed if a CP is of the view that Openreach faults are more likely when the cause of fault is not clear, then the more likely it is that they will adopt a strategy of dispatching Openreach first. The RWT charge is therefore not a disincentive under these conditions unless made far more punitive. There is however no technical mechanism for Openreach to reduce unnecessary visits as all requests from a CP to it will result in a dispatch.

12. If we consider the total number of faults that a CP detects is Ntot and of these N cannot be determined remotely to be a CP fault (unable to determine the cause of the fault and its location) then Ofcom have failed to:

    a. quantify what fraction of Ntot is N and what effect this would have, and

    b. quantify what % of N are NCP and NOR and as such determine what strategy a CP is likely to adopt, instead of assuming that the RWT charges will act as a disincentive to dispatch Openreach first.

Openreach's response to Ofcom's Dark Fibre Consultation published on 23 November 2017

Further submission dated 10 January 2018:

Competitive Conditions and the Delimitation of Product and Geographic Markets

Non-confidential version for publication

A BACKGROUND

1. This Annex sets out the way in which Ofcom historically defined product and geographic markets for leased lines which were primarily around the TI (SDH) interface. BT supported this approach because we considered it to be consistent with standard economic theory of how to apply the HMT but also because the findings were appropriately informed by empirical evidence of variation in competitive conditions.

2. We set out below how this approach effectively ended in the 2016 BCMR when (against all expectation) bandwidth breaks were dispensed with and no weight was given to the overwhelming evidence of variation in competitive conditions.

3. We also show below that had Ofcom given weight to this evidence of variations in competitive conditions in a way similar to its approach in the past, then Ofcom would likely have found an additional bandwidth break between <1G and 1G as well as separate markets for the three sectors of mobile backhaul, LLU backhaul, and business access. Such a finding would mean that Ofcom is wrong to rely on its 'safe harbours' approach and BT may well not have SMP where Ofcom has assumed this to be a safe assumption.

4. In all previous BCMRs prior to 2016, Ofcom gave significant weight to empirical evidence that different products in certain geographies attract different competitive entry, and therefore face different conditions of competition. Ofcom concluded it was appropriate to take into account the difference in competitive conditions in the determination of market boundaries, SMP assessment and remedies. This approach was consistent with Commission guidance which noted that NRAs frequently delineate higher bandwidth services in this fashion.[1]

5. We do not see that there should have been any difference in outcomes moving from the TI world to Ethernet; the choice of interface has no underlying economic significance and BT never accepted that the two sets of services should have been put into separate economic markets. From an administrative perspective, however, we understood that separating them was convenient because, following the 2005 Undertakings and the creation of Openreach, the two sets of services were supplied by different divisions in BT and combining them could have raised other difficulties.

B THE EVOLUTION OF ECONOMIC MARKETS FOR TI SERVICES

6. Table C.1 shows the way in which economic markets for both TI and Ethernet have changed since the first market review in 2004. At that time, TI was the dominant technology with AI services being comparatively small scale. Even at that stage, Ofcom had three product markets for TI albeit they were national. By 2008, this was significantly extended to four product markets

[1] See for example the Commission Staff Working Document SWD(2014) 298 section 4.2.2.3 Wholesale high-quality access text on page 51 where there is extensive discussion on this matter.

with a geographic split for two of them. The 2013 market review expanded the London CELA into a wider WECLA coverage.

Table C.1 Ofcom wholesale leased line markets

	TI (SDH and PDH)							AI/MI (Ethernet & WDM)			
2004	Up to 8M	34/45M & 140/155M				622M		all bandwidths			
	National	National				National		National			
2008	Up to 8M	34/45M		140/155M		622M		≤1G		>1G	
	National	CELA	RoUK	CELA	RoUK	National		National		National	
2013	Up to 8M	34/45M		140/155M		622M		≤1G		>1G	
	National	WECLA+	RoUK	WECLA+	RoUK	National		WECLA+	RoUK	WECLA+	RoUK
2016	Up to 8M	no product markets defined						all bandwidths			
	National	n/a						CLA	LP	RoUK	

No SMP BT with SMP

7. At both the very top end of the bandwidth range and the very bottom end of TI, Ofcom defined national markets and (as discussed below), the evidence of selective entry played a key role in reaching this conclusion. For the highest bandwidth (622M), Ofcom recognised that OCPs would target these customers and that customers may have an element of choice as to where to locate themselves to avail of competitive choice. At the bottom end, competitive conditions were more uniform and Ofcom had allegedly a stronger case to argue that BT had market power in this part of the market. In between it was a mixed position which necessitated varying the markets by geography as well as the SMP assessment.

8. Ofcom very consciously balanced the potential for a possible chain of substitution against the hard empirical evidence of selective entry; where entry is likely within the relevant timeframe in a particular bandwidth segment as opposed to across a range of bandwidths, competitive conditions are likely to be different between these bandwidths.

9. The role of this evidence is evident in the following extract from the July 2008 Consultation:

> *3.42 Even if there was a break in the chain of substitution, we could regard 155 and 622 Mbit/s circuits as being part of the same market if the competitive conditions of the two services were sufficiently homogeneous. However, the evidence suggests that the competitive conditions of 155 Mbit/s and 622 Mbit/s lines differ significantly. BT appears to have around 11% of retail 622 Mbit/s sales, but around 49% of 155 Mbit/s lines in the UK excluding Hull. This result does not seem to be explained by 'small number' issues because significant quantities of both lines are supplied.*
>
> (emphasis added)

10. Here Ofcom argued that homogeneity of competitive conditions could justify the inclusion of two different products in the same market despite other evidence pointing toward a break in the chain of substitution, but the evidence did not in fact support this. The general position was that, a market break would likely align with a change in competitive conditions.

11. It should also be noted that, in 2008, a number of stakeholders argued that LLU backhaul was a separate market from business access services. In the December 2008 Statement, Ofcom

decided not to find LLU backhaul to be a separate market also based on an analysis of competitive conditions:[2]

> *5.85 We believe that there is likely to be significant similarity of competitive conditions in the supply of Ethernet-based LLU backhaul links and AISBO. The similarity arises because the same technology is involved in providing transparent transmission technology between an operator's POC and a point in the local access network. This similarity means that the same type of entry barriers and economies of scale and scope are faced, especially those relating to digging and ducting.*
>
> *5.86 In addition, the available evidence suggests that competitive conditions do not differ significantly between LLU backhaul and other low bandwidth AISBO services. For example, our information is that competitive provision of LLU backhaul (i.e. other than using BT's network) amounts to no more than 20% of the total. We estimate that BT's share of the low bandwidth AISBO market was around 73% as of December 2006. The similarity of market shares, together with similarity of entry and cost conditions, suggests that the competitive conditions between LLU backhaul and other AISBO markets are similar.*
>
> (emphasis added)

12. A further key issue was the setting of the competitive threshold to inform the SMP assessment. The January 2008 Consultation examined the relationship between BT's service share and network reach analysis to show the extent to which CPs could compete effectively and concluded that the BT+2CPs was an appropriate standard:

> *6.51 In practice, the area in which there are two or more operators in addition to BT closely matches the area in which BT's service share is relatively low. Our proposal is therefore to define the boundary of the local geographic market in the London area primarily on the basis of the number of operators able to provide services in a postal sector on the basis of our 250m network build assumption. Postal sectors where 2 or more alternative operators are able to provide a service is defined to be in a separate geographic market from those postal sectors where there is one or less alternative operators able to provide a service.*
>
> (emphasis added)

13. Along with a contiguity requirement,[3] this defined the CELA boundary for high bandwidth TI services (155/622M) and this geography in turn defined the CLA boundary for Ethernet in the 2016 BCMR.[4]

14. Finally, Ofcom in the December 2008 Statement (Footnote 26) also explicitly noted that there is the potential for heterogeneity of competitive conditions to influence product market definition:

> *[26] Although homogeneity of competitive conditions is usually used in the context of geographic market definition as a reason for aggregating different areas not linked by demand or supply side substitution, it might also be used in the product market context.*

[2] BT has raised the issue of contract tendering in particular which we believe is important for backhaul markets. Even if supply side conditions were similar as Ofcom suggests above it would be important to look at the demand side and for example countervailing purchasing power.

[3] BT does not accept the validity of the contiguity requirement.

[4] We discuss the precise computation of these measures below.

C THE EVOLUTION OF MARKETS FOR ETHERNET SERVICES

15. The table above shows that the general trend for TI services to be distinguished by bandwidth and disaggregated by geography was replicated for Ethernet services up until 2016.

16. In the 2008 BCMR, heterogeneity of competition was a principle which was being applied to Ethernet (AISBO services as described then) as the following extract from the January 2008 Consultation demonstrates:

> *Variations in competitive conditions*
>
> *3.342 The reasons for variations in competitive conditions between low bandwidth alternative interface and high bandwidth services are likely to arise from significant sunk costs and economies of scale which are likely to act as a barrier to competitive entry. In the absence of regulation, it is likely that retail competitors to BT would be reliant on self-supply or interconnection with OCPs in order to compete. Given that a significant proportion of the costs of entry would need to be sunk the question is whether these barriers are more or less likely to be overcome at different bandwidths such that variations in competitive conditions might be observed.*
>
> *3.343 In the case of higher bandwidth AISBO services the much higher revenues likely to be associated with 2.5Gbit/s services suggests that CPs would be able to offset associated investment risks associated with high sunk costs. In the case of high value retail services the CP would face relatively higher certainty that any investments sunk in the provision of a single retail contract could be recovered over the duration of the contract. At lower bandwidths, due to the dominance of common costs, operators need to be present across a wider set of bandwidths to take advantage of possible economies of scope and scale. Therefore in order to compete effectively the CP would need to ensure a larger volume of sales over a particular timeframe, which may limit the scope of competition as it makes the prospect of entry riskier (i.e. the CP would need to secure multiple contracts in order to compete).*
>
> *3.344 The above discussion therefore suggests that CP's may be able to compete more intensively for higher bandwidth services. Indeed, this potential basis for variations in competitive conditions is also supported by BT's retail market shares. BT's retail national market share for low bandwidth AI services is 72% compared to 13% for high bandwidth AI services.*
>
> *3.345 The above analysis suggests that, for the purpose of assessing SMP, two separate AI markets might be considered, one for circuits up to and including 1Gbit/s and the other for circuits over 1Gbit/s. This has been informed primarily by the cost comparisons but is also supported by the likely variations in competitive conditions. For the purpose of assessing SMP, Ofcom considers that it is not appropriate to identify a further break in the market at low bandwidths for Alternative Interface markets as there is no compelling evidence of significant variations in competitive conditions at these bandwidths.*
>
> (emphasis added)

17. The above extract also shows that Ofcom [3.342] was aware that competitive entry would vary by expected revenue of the site and barriers to entry would vary according (roughly) to bandwidth. This approach was wholly in line with all the submissions BT has made on this matter.

18. The June 2012 BCMR Consultation included the following text as to why there should be a bandwidth break above 1G for Ethernet services (and which largely mirrored the discussion in 2008 for TI services) –

3.246 Based on the analysis set out above, we consider that two separate AI markets should be defined: one for services up to and including 1Gbit/s and the other for services over 1Gbit/s. In summary, the key reasons for this are:

- evidence that demand-side substitution is limited:
  - a comparison of relative prices, which suggested that there was a step change in price of services above 1Gbit/s; and
  - an analysis of equipment and other costs of providing services, which suggested that differences in these costs are sufficiently significant that a competitive provider would be expected to price to reflect these differences.
- evidence that the competitive conditions in the two markets appear to differ significant:
  - an assessment of CP's incentives, which suggested that they will be able to compete more intensively for high bandwidth services: and
  - BT's market share is significantly lower in the high bandwidth market.

D WHAT HAS HAPPENED TO THE TI MARKETS?

19. BT has long argued that the technical interface (eg TI or AI) does not define an economic market as such; it is an industry-wide feature which is not within the control of any particular operator which would allow differentiation at the upstream level. In addition, long term overall growth in bandwidth growth is also not determinative when defining market boundaries. Technical progress (primarily in core network functionality) is allowing gradual price reductions which spill over into more bandwidth being available for a given price across the board and there is a corresponding gradual upward movement in bandwidth for upstream services across the board. Again, this does not by itself indicate that the fundamental structure of markets should change. The actual bandwidths which defined the breaks into the four TI bandwidth markets have changed over time, but the basic characteristics of demand and supply which created the bandwidth breaks have not changed, they now exist at higher bandwidths.

20. Over the years from 2008 to now, whilst the technology may have shifted from TI to AI and bandwidths have scaled up over the period, in general, the end sites themselves and their overall commercial value has not changed. The sites that were of interest to CPs under TI are still the targets for Ethernet supply. It is the downstream value of a site that attracts competitive entry. At any given point in time, the upstream bandwidth relative to other sites is a proxy for this downstream value, but only a proxy.[5]

21. It follows that the breakdown for TI services in 2008 and then in 2013 would be fully replicated for Ethernet or AI services. By 2008, and particularly at higher bandwidths, TI services were in sharp decline whilst Ethernet demand was growing rapidly as shown in Figure 4.[6]

22. CPs would still wish to target precisely the same sites as before albeit with a different technology and with possibly different bandwidths[7]. The demise of almost all TI services says

[5] The relevant upstream bandwidth which is a proxy to the value of the site should be the aggregate bandwidth to that site. Where Ofcom has defined a focal product which is a tributary of a multiplex and not the aggregate bandwidth this may not correspond to a wholly reliable proxy. For example a WDM wavelength (as Ofcom's defined focal product here) is not always the aggregate bandwidth to the site and may not always correspond to an alternative EAD service to that site at the same nominal bandwidth.

[6] Page 110 of Openreach's response to the Dark Fibre Consultation, submitted on 29 December 2017.

[7] It is not always possible to make a precise comparison between TI and Ethernet as the role of packet switching introduces other factors including substitution of customer networks with CP networks.

nothing about the underlying fundamentals driving entry decisions where bandwidth is just a proxy for value of the site.

23. An increase in the number of product and geographic markets for Ethernet services over time as for TI services was, therefore, to be expected and certainly by 2016 by which time Ethernet had become a mature technology.

24. There are other relevant factors and we highlight below two of those. First, at the end of the lower bandwidth scale for services up to 100M, it is clear that these can be supplied by a combination of EFM, NGA and Ethernet fibre which does not have a parallel with TI services. Ofcom's second BDRC survey indicated a high proportion of business access users envisaged moving to shared fibre services (NGA) in case of a price increase of their Ethernet product. Second, within VHB, the role of optical services somewhat complicates the position as this is a multiplexed service and can also be an aggregation service and to an extent is actually downstream of the regulated upstream Ethernet services. We suggest it would be wrong to regard all of VHB as a single amorphous market and some delineations within VHB may well be appropriate which would parallel the top end 622M TI market.

25. In the context of this Consultation, the key conclusion is that BT does not accept that a single product market up to 1G is at all plausible; in the 2017 BCMR judgment the CAT acknowledged that BT did not concede that all bandwidths up to including 1G formed a single market.

26. This matter is of some importance and we reproduce the following from the CAT Judgment:

> 115. At least for the purposes of this appeal, BT did not dispute that a chain of substitution existed for bandwidths up to and including 1G; or that a chain of substitution existed for bandwidths above 10G. BT indicated that it took this stance because whilst it did not agree that bandwidths up to and including 1G formed a single market, it did not consider it worthwhile appealing such a finding, since the outcome of an SMP assessment at those lower bandwidths would be the same whether or not they were considered a single market.

27. The second sentence gives the impression that BT simply accepted that it would have SMP up to 1G and Ofcom in effect now uses this as an admission of that supposed fact. This however is to misunderstand our position. It was clear from BT's evidence in the appeal that BT objected in principle to the approach taken by Ofcom to the market analysis[8] for both services ≤1G and services >1G but the specific grounds of appeal were focussed on points which were both materially significant and for which BT had strong evidence available at that time.

28. In particular, for services ≤1G, it was not possible for BT to provide appropriate empirical evidence as Ofcom uniquely has access to overall market data and Ofcom had refused to undertake the necessary analysis which would have placed such an appeal on strong evidential grounds. Specifically, during the period of consultation of the last BCMR BT requested Ofcom to undertake a more granular assessment which would have likely shown that the narrower TI markets were indeed replicated with Ethernet.

[8] For example, Reid 1 paragraphs 166-167 makes clear BT's expectation both that a bandwidth break exists between 100M and 1G and also that the three different sectors delineate different markets but that BT does not have access to the evidence which would determine the outcome.

29. An extract of this request[9] is reproduced below for three groups of bandwidths of Ethernet services, namely up to 100M, 1G and for VHB:

> - A breakdown of HNR of BT + 1/+2/>2 based on actual circuit ends excluding LLU and MNO backhaul but split by three groups of bandwidth of EFM/10/100Mb, 1G and >1G. If possible also run for a range of plausible dig distances to flex points say 50m – 200m.

30. In summary, we would have expected there to be at least three if not four product/geographic markets for Ethernet services by 2016 (as it was the case for TI) and the footprint for a low bandwidth market up to 100M could be quite different to that of other products.

E POSSIBLE DELINEATION OF MARKETS BY SECTOR

31. Throughout the previous BCMRs, Ofcom has consistently recognised the existence of LLU backhaul and mobile backhaul as sectors with potentially distinct characteristics. However, on each occasion, Ofcom has not found the differences sufficient to create a break in the markets. As we have noted earlier in this Annex, this was in part on the basis of selected evidence that the barriers to entry and the conditions of competition were allegedly similar to those of business access for each bandwidth in the same geography. In this final section we look briefly at how the principles already discussed in this Annex might apply to the analysis of the three sectors of mobile backhaul, LLU backhaul, and business access, noting the observations about the three sectors already set out in paras 177-189, 204-210, and 254-260 of the main response.

32. Whilst some of the evidence may allegedly have been supportive of Ofcom's conclusion against defining separate markets for each sector, there are other pieces of empirical evidence which point strongly towards a finding of separate markets by sector as set out in the main response in the paragraphs noted above. We consider that LLU backhaul and mobile backhaul may each delineate separate sets of economic markets so that the actual markets for the BCMR are distinct by sector, and within sector by bandwidth, and within sector and bandwidth, by geography.

33. In all the previous BCMRs, Ofcom started by asserting a focal product based on a technical definition of BT's regulated products. All the analysis then proceeded from these product definitions. However, this approach does not accord with the requirements of the Modified Greenfield approach which requires that a market analysis start by considering what products would exist absent regulation in the market under review. Ofcom started with regulated EAD as the blueprint for the focal product and never addressed the necessary question of 'what product would emerge in an unregulated competitive market?'

34. In the AI market, BT has been subject to continuous regulation as well as the additional constraints of the voluntary commitments. In 2013, WELCA+ was deregulated at >1G. However, in 2016 the LP part of this was re-regulated while the CLA part was deregulated at all bandwidths. Given the extent of regulation and the lack of consistency in deregulation, we believe that even if Ofcom had asked the correct Modified Greenfield question as to relevant focal products, it is more difficult to make a concrete inference as to the counterfactual of what products BT would offer absent regulation. However, Ofcom always has had the opportunity to

[9] Letter from BT to Katie Curry Director of Economics at Ofcom of 9th June 2015.

ask OCPs who are unconstrained by regulation what actual products they offer customers in the different sectors, including all the relevant terms of supply.[10]

35. There are a number of parameters by which we would expect actual products to differ by sector including:
    - The number of end sites covered by a single contract;
    - The duration of a contract;
    - The total value of the contract;
    - Extra conditions on which the contract is contingent, for example, build to specified sites;
    - Bespoke technical characteristics, for example, specific aggregation and associated QoS management, synchronisation requirements, etc.

36. When assessed together, these factors are likely to point towards considerable differences in actual products offered in the different sectors. Moreover, it is very likely to point to quite different conditions of purchasing where the customers of LLU backhaul and mobile backhaul are able to exercise considerable countervailing buying power (they probably have more countervailing buying power than CP buying business access).

37. We have already noted in this Annex that different sites have different attractiveness for a supplier based on the potential revenue available by supplying the site, including retail revenue. This creates different conditions of competitiveness and attractiveness of entry according to the value of sites and this is strongly supportive of different markets by bandwidth. In a similar way, very large customers are also particularly attractive to suppliers based on the revenue that is available from a single contract with a large customer. This also creates different conditions of competitiveness and supply, this time by customer, and as the largest customers are the MNOs and the LLU operators, this is strongly supportive of different markets by sector.

38. In addition, long term contracts and bespoke technical features and terms and conditions tend to go along with countervailing buying power, which means that market share is a less reliable indicator of SMP and therefore the existence or otherwise of countervailing buying power needs to be taken into the account in the assessment of SMP as well as in the identification of market boundaries.

39. BT has limited access to data to undertake the necessary analysis, however, the following evidence which is available to BT shows the scale, importance, and customisation of mobile backhaul and LLU backhaul contracts would indicate the likelihood of sector specific markets.

    - BTW offers Fibre Ethernet mobile backhaul products based on Openreach inputs to ✂ . Each contract is bespoke and tailored to the specific requirements of the customer. These contracts cover approximately ✂ mobile base stations and the contracts have durations of between ✂ years. The total value of these three contracts is around ✂ per annum.
    - Openreach's OSA product has the characteristic that the price per connected site declines as the number of connected sites increases. There are pricing discount break points at 350+ circuits and 750+ circuits. ✂

[10] We note that Ofcom did start to consider the significance of the fact that OCPs do not always offer the same products as BT's regulated products during the 2016 BCMR consultation process. Prior to this this, Ofcom's information requests that gathered market volumes and market shares information assumed that CPs offered products directly equivalent to BT's regulated services. It is only in the 2016 BCMR consultation that Ofcom made its information request more general (when pressed by BT on the issue) to overcome clear inconsistencies in OCP data, in large part arising from the fact that OCPs actual products are not directly equivalent to BT's regulated products. However, most importantly, this broadening in scope of the relevant products the data analysis by Ofcom was only reflected in the assessment of market shares and hence SMP, it was not reflected into the identification of relevant focal products.

. Using reasonable assumptions on the use of these circuits for LLU backhaul, Openreach estimate that these ✂ contracts account for around ✂ of all the OSA volumes. Openreach estimate a further ✂ of the OSA volumes is used for ✂ , as part of the MEAS contracts referenced in the bullet above.

- At the CAT hearing, all discussion of VMs commercial offers including all technical details were discussed in camera which would not have been justified had the offers been 'off the price list'.

40. In summary, had Ofcom (i) correctly applied the principle of Modified Greenfield to the market analysis and considered what products would be offered in a competitive marketplace absent regulation and (ii) investigated further the evidence mentioned by BT, Ofcom would have found significant difference between the three sectors of mobile backhaul, LLU backhaul, and business access and these differences would have pointed strongly towards separate markets for each of the three sectors.