Promoting investment and competition in fibre networks

Wholesale Fixed Telecoms Market Review 2021-26 consultation

TalkTalk submission

May 2020

NON-CONFIDENTIAL

1 Summary

1.1 TalkTalk supports Ofcom's objective of accelerating FTTP investment in the UK to meet growing and future demand for ultrafast broadband. TalkTalk is also committed to supporting these investments by rapidly migrating our customers onto FTTP to provide revenue certainty. Alongside promoting investment, Ofcom should focus, as it always has done, on making the communications market work for all consumers and businesses and regulating to constrain Openreach's market power. Ofcom's duties to protect consumers and businesses are becoming even more important given the economic downturn and the likely increase in inequality caused by Covid-19.

1.2 As part of the package to achieve FTTP investment, Ofcom proposes to raise legacy wholesale MPF/FTTC prices at CPI inflation, rather than regulating them at cost. This was one of the main demands of BT/Openreach. This proposal would lead to consumers' broadband bills being about £900m higher over the charge control period compared to cost-based prices. But the additional profit from higher FTTC prices will not increase Openreach's incentives to invest in FTTP. If anything, higher FTTC prices will likely discourage FTTP investment incentives by increasing Openreach's profit from sweating its legacy assets. As a result, Ofcom's proposals risk undermining the delivery of its stated policy objective.

1.3 The pricing proposal is flawed in another respect. Ofcom argues that setting wholesale MPF/FTTC prices above cost will raise the price that alternative network operators ('altnets') charge thereby stimulating altnet FTTP investment; which in turn will encourage Openreach investment. However, because the price rises are untargeted and subject to dilution effects, only 1% of the £900m increase in broadband bills faced by consumers and businesses will feed through to the altnets, increasing their returns by a negligible amount (0.03%). Indeed, higher wholesale FTTC prices may reduce altnet FTTP investment since higher prices will erode the non-BT ISP market share reducing the viability of altnet investment. This would further reduce Openreach's incentives to invest.

1.4 Ofcom's proposal could improve the incentives for Openreach to deliver additional FTTP investment if it was accompanied by conditions that ensured that additional FTTC profits directly led to FTTP investment that would otherwise not have been made. Ofcom has not proposed any such 'commitment mechanisms'. Possible commitment mechanisms could include ring-fencing of capital, funding and price incentives controlled by the Openreach board, and penalties/enforcement of roll-out phasing.

1.5 If it is not possible for Ofcom to impose an effective and pro-competitive commitment mechanism, it should look to mitigate the harm to consumers from higher prices. This could be achieved by introducing price increases in a phased way, linked to altnet FTTP investment. This could provide the same marginal investment stimulus but reduce the potential harms from higher prices. TalkTalk has proposed a methodology called 'adaptive regulation' that does this. Alternatively, Ofcom could set the MPF/FTTC price index at CPI-2% (or CPI-CPI): rather than CPI+0%. Based on Ofcom's own modelling, a CPI-2% price index would allow altnet FTTP investments enough 'headroom' to make a positive return even using Ofcom's highest cost estimate – yet it would save customers £500m over the review period.

1.6 Ofcom's proposals for regulation of leased line products will cause significant consumer and business harm. The proposed CPI+0% wholesale price cap will lead to end-user leased line prices being £500m above the level they would be if wholesale prices were based on cost adding hundreds of pounds to the costs for small businesses at a time of significant economic uncertainty. Further, the restriction on using Openreach dark fibre access will deny most customers the significant innovation and competition benefits dark fibre enables. Ofcom says its proposals are to stimulate network build – but Ofcom does not explain why additional leased line network build delivers material benefits, given all areas have leased line networks already, or how any potential benefit outweighs the significant and certain harm.

1.7 We propose that Ofcom undertakes a thorough review of the different incentives for Openreach and altnets to invest in FTTP and analyses the costs and benefits of different regulatory options. [✂]. A cost benefit analysis would help to understand Openreach's incentives and hold them to account. Whilst his may delay a final decision it will ultimately result in a better outcome for consumers, competition and the wider UK economy.

1.8 The existing broadband networks have performed well during the Covid-19 lockdown. However, the recession caused by Covid-19 is likely to have significant impacts on the sector – lower incomes and business activity will reduce demand and willingness to pay for premium services which, combined with reduced capital availability, is likely to slow investment. It is important that Ofcom properly assesses the implications of this for regulation.

1.9 In the rest of this summary, we highlight the key areas where we think Ofcom could reconsider its approach and suggest changes to improve the proposals.

Background

1.10 TalkTalk fully supports Ofcom's objective to accelerate FTTP investment by both altnets and Openreach as well as driving high FTTP uptake amongst consumers and businesses. FTTP investment can also play a key role stimulating growth in the current recession. [✂] demonstrate TalkTalk's commitment to FTTP and the key role ISPs have in realising this objective.

1.11 The transition to FTTP must, and can, be done in a way that protects those who rely on lower speed legacy connections – either because no FTTP is available yet or because they are less affluent and cannot afford higher priced FTTP products, particularly given the already pronounced impact of the Covid-19 pandemic on inequality in Britain.

1.12 [✂].

Wholesale local access regulation

1.13 Ofcom's proposed CPI+0% price indexation for wholesale MPF/FTTC prices in Area 2 (the 70% of the UK where there is one or more existing or planned competitor(s) to Openreach) will result in retail broadband prices being about £900m above cost across the period. This

price indexation approach is a significant departure from previous cost-based price caps and is not the 'price continuity' that Ofcom claims.

1.14 The higher MPF/FTTC wholesale prices are aimed at increasing altnet FTTP investment through increasing retail FTTC prices, which will in turn increase retail and wholesale FTTP prices, increasing altnet profits and making otherwise unviable altnet investment viable. Ofcom asserts that higher wholesale prices will have a "*significant and positive*" impact on altnet FTTP investment. However, analysis shows that in practice very little of the increase in prices will flow through to altnets – altnet revenue will increase by only £9 million across the period which is just 1% of the £900m of additional charges paid by consumers over the period. The flow through is so low because altnet customers will represent a small proportion of all customers in Area 2 (on average across the period) and because of a number of identifiable dilution effects, such as partial wholesale to retail pass through. The impact on returns of this additional revenue up to 2026 is negligible (about a 0.03% increase in IRR) which will have a trivial impact on investment levels. Ofcom's proposed pricing approach is a very inefficient way of stimulating altnet FTTP investment.

1.15 Higher wholesale MPF/FTTC prices will also have a negative impact on altnet revenues, since they will erode non-BT ISP market share, and undermine altnet investment returns which depend on building scale quickly. Ofcom accepts this effect but has asserted that it will not "*significantly damage*" altnet investment. Analysis shows that even a low level of share erosion will reduce altnet investment returns by 0.04% - a small effect, but greater than the positive impact on returns described above. Thus, higher wholesale FTTC prices will likely reduce altnet FTTP investment levels – by a small amount. It certainly will not have the "*significant and positive"* effect Ofcom claims.

1.16 Ofcom has suggested that Openreach will divert the excess profits from higher MPF/FTTC prices into FTTC investment. There is no economic logic for this idea since additional profit from higher FTTC prices will not alter Openreach's incentives to invest in FTTP. If anything, higher FTTC prices will likely discourage FTTP investment incentives by increasing Openreach's potential profits from sweating its legacy assets. Openreach will only divert excess profits into additional FTTP investment that they would otherwise would not have made if there is some form of 'commitment device' that forces them to do so. However, this may distort and deter competition since it could mean that Openreach was effectively subsidised, facing a lower incremental investment cost than its rivals.

1.17 Thus the overall effect of Ofcom's policy (compared to cost-based prices) will be less altnet investment, less Openreach investment, higher retail prices and weaker competition.

1.18 A possible improvement to CPI+0% indexation would be to target the higher prices so that more of the increase flows through to altnets and market share erosion is reduced. TalkTalk has proposed an approach called adaptive regulation that is targeted in this way – wholesale prices only rise above cost if and when altnet FTTP investment occurs in a locality. This delivers the same (albeit small) positive impact on investment through slightly increasing altnet revenues, but avoids the negative effect from erosion and also, because it is better targeted, results in much lower increases in consumer prices. Ofcom rejected adaptive regulation on the basis of an imbalanced assessment that ignored key evidence. We have included as an Annex a report by Frontier Economics that compares the two approaches using an objective approach. Ofcom should conduct an objective and even-handed

assessment of the impact of different regulatory options to identify which is in consumers' interests.

1.19 If Ofcom does not adopt adaptive regulation there are other changes it could make which would better achieve its objectives of promoting FTTP investment:

- If Ofcom decides to adopt a price indexation approach it should use CPI-2%, rather than CPI+0%. Based on Ofcom's modelling CPI-2% will provide adequate 'headroom' for efficient altnet FTTP investment even using Ofcom's high altnet cost estimates. This approach will significantly reduce the harm to consumers from inflated retail prices by about £500m
- Area 2 should be split into three different geographic markets – Area 2 as currently proposed is not "*sufficiently homogeneous*" and so remedies are likely to harm consumers. For instance, in the majority of Area 2 where no altnet FTTP investment is planned before the end of the control period there can be no case for high prices to encourage altnet investment and so prices should be set at cost.
- Ofcom should in any case review its product market definition since there is evidence indicating that FTTP is a separate economic market. If this is the case, Ofcom would need to consider whether any network has SMP in this market and, if so, what remedies should apply.

1.20 In Area 3 (the 30% of the UK where there is no current or planned competitor) Ofcom is proposing a new and untested RAB approach. This aims to incentivise Openreach to invest in FTTP in Area 3 using inflated MPF/FTTC prices in Area 3 to subsidise the FTTP investment losses. Though a RAB approach has been successful in other sectors its success cannot be assumed in this case since the market and competition conditions are very different.

1.21 On proper inspection, the RAB approach will result in little additional investment by Openreach yet will cause significant harm:

- due to capacity constraints, most additional investment in Area 3 will merely divert investment from more marginal investments in Area 2;
- poorer and vulnerable customers will suffer higher prices to subsidise FTTP for the better off, in turn aggravating inequalities;
- Ofcom's approach will provide Openreach a subsidy equivalent to around £400 per home passed making it extremely difficult if not impossible for investors like Gigaclear to compete. This elimination of competition will undermine the Government's £5bn subsidy scheme which depends on competition to deliver value for money;
- the RAB approach may not be legal: a subsidy scheme does not meet Ofcom's view that an SMP Condition must correct a risk of price distortion; and, it may be incompatible with State Aid rules.

1.22 TalkTalk considers that a suitable alternative subsidy scheme could be designed by Government or Ofcom that overcomes many of the considerable problems of the RAB approach – for instance by making any subsidy scheme open to competition. In any case, from April 2021 adaptive regulation should be imposed which will provide the opportunity for altnet FTTP investment, good incentives for Openreach to invest and, by having a

consistent approach nationally, avoids harmful distortions. When the subsidy is designed it can be overlaid on adaptive regulation.

1.23 Ofcom has also proposed a glidepath approach for how prices changes in Area 3 rather than applying a starting charge adjustment. This is contrary to Ofcom's own clear policy that it only applies a glidepath where the misalignment between price and cost is due to efficiency or volume effects. In this case the misalignment is due to a change in policy that the HON adjustment should not be recovered. Ofcom has provided no valid reason to depart from this policy. Ofcom's approach is likely to increase wholesale prices by over £100m.

1.24 We agree with the aim of accelerating copper switchover to improve the viability of Openreach FTTP investment. However, Ofcom's proposed regulation has the potential to harm consumers if it is not designed well. To address this risk we consider two main changes are required: no relaxation in regulation should be permitted until certain operational readiness targets are met; and there should be more time for customers to migrate before relaxation occurs. Also, the triggers for reducing regulation should not be linked to G.fast coverage: this is inconsistent with Ofcom's goal to promote FTTP and Government's objective for 100% 'gigabit-capable' networks. Including G.fast coverage will also lead to complexity and uncertainty. There is also need for greater collaboration between Ofcom, Government and industry to make a plan for the UK to achieve its goal of 100% FTTP availability and take-up. ISPs' central role in managing the migration of customers to the new FTTP networks, and the role of altnets in roll-out alongside Openreach, must be considered when undertaking this work.

Leased line regulation

1.25 For leased line regulation Ofcom has replicated its objectives and regulation from that for broadband and FTTP – namely to promote network investment by setting wholesale prices substantially above cost. This fails to appreciate the palpable differences between broadband/FTTP and leased lines: whilst it is important to accelerate FTTP investment because the availability of FTTP is so limited today, leased line networks are available across the UK today so quality and competition benefits from further networks are much more limited. We are disappointed that despite raising this important issue in our response last year, Ofcom has not engaged with the need for a different approach for leased lines.

1.26 Ofcom's proposals for CPI+0% indexation and limiting DFA availability will cause significant harm to businesses, particularly those struggling under the economic downturn: the proposed CPI+0% wholesale price cap will lead to end-user leased line prices being around £500m above the level they would be if wholesale prices were based on cost; and, the limited availability of Openreach Dark Fibre Access (DFA) will deny most customers the significant innovation and competition benefits dark fibre enables.

1.27 Yet higher wholesale prices will have little impact on leased line network investment (like for FTTP networks though for slightly different reasons) and any increase in investment will deliver marginal consumer benefits. Any additional leased line network will also have a negligible impact on FTTP network investment since the extent of FTTP duct construction required will only be slightly reduced by sharing with ducts for leased lines.

1.28 Given the absence of any material benefit from additional leased line networks and the harm from artificially promoting investment, Ofcom should impose Dark Fibre Access (DFA) regulation (with a cost-based charge control) in all or most areas where Openreach hold SMP as well as a transitional charge control on Ethernet.

1.29 There are also material errors in Ofcom's underlying leased line market analysis: Ofcom should define separate dark fibre markets upstream of leased line access and inter-exchange leased line markets (the remedy for which is DFA); and the no SMP finding in CLA has no meaningful evidence to support it; and the market definition for inter-exchange circuits systematically over-estimates potential competition by failing to reflect the need for the same operator to be present at both ends of a route.

Impact of Covid-19 pandemic and timing of statement

1.30 As the summary above and the rest of this document explains, Ofcom's proposals need to be refined and further analysis needs to be conducted to ensure Ofcom's objectives are met. Ofcom also needs to properly consider whether and how its regulation should change to reflect the economic downturn: incomes, ability to pay and willingness to pay will be depressed particularly for the less well off; investment capital will be restricted; there will be much greater uncertainty; and so overall investment is likely to reduce. Ofcom needs to properly consider how this new context effects the appropriate regulation. Whilst further analysis and considering Covid-19 impacts may delay the final decision it will ultimately result in a better outcome for consumers, competition and the wider UK economy.

2 Introduction

2.1 In this section we comment on some general points about the WFTMR: Ofcom's approach (section 2.1); the impact of Covid-19 (section 2.2); and, timing of the statement (section 2.3). At the end of the section, we explain how the submission is laid out (section 2.4) and provide a summary of the main areas where we disagree with Ofcom's approach and how we consider Ofcom should address them (section 2.5).

2.1 Ofcom's approach to the consultation process

2.2 TalkTalk is disappointed with Ofcom's approach to this market review and the poor quality of both quantitative and qualitative analysis. In many cases, insufficient quantitative and qualitative analysis has been undertaken.

2.3 The WFTMR is a critical review for the fixed telecoms sector – we are on the cusp of potentially significant FTTP investment and we need to ensure that this investment is accelerated while, at the same time, consumer interests are protected. The possible need for changes to the regulatory approach we have had for the last 15 years magnifies the need to ensure that any new regulation is well-designed and thoroughly analysed to assess whether it will deliver the outcomes that consumers need. If Ofcom gets the regulation wrong it could cause profound damage, slow investment and leave consumers paying excessive prices for poor services.

2.4 However, despite the clear need for thorough analysis Ofcom has – since it developed its initial idea that high wholesale FTTC prices will accelerate FTTP investment – not used its considerable resources to assess the impacts of this concept or refine regulation to best deliver investment and protect consumers. Rather, it has adopted a selective approach: it has been dismissive of other options and focussed its efforts on trying to find weaknesses in them; whilst at the same time choosing not to objectively assess the harms that its own proposals will cause or provide comparative analysis across policy options. Some examples of this are below:

- Ofcom's approach of setting high wholesale FTTC prices is founded on an assertion that they will have a "*significant and positive*" impact on altnet FTTP investment. Yet Ofcom has not done any analysis to test if this is true. Analysis is possible which shows that any effect is certainly not significant and is likely to be negative rather than positive.
- Ofcom's assessment of TalkTalk's proposal for adaptive regulation (which was outlined in response to the Remedies consultation in 2019) versus its CPI+0% indexation approach is imbalanced:
  - its assessment omitted areas where CPI+0% was clearly inferior such as protection from predatory pricing and the impact on Openreach's investment incentives;
  - it was based on unfounded presumptions such as investors being too unsophisticated to understand adaptive regulation and that Openreach will invest more in FTTP because of excess profits on wholesale MPF/FTTC;

  - Ofcom criticised adaptative regulation for the risk of excessive prices but did not assess CPI+0% against the same concern, even though there is a higher risk and greater potential harm from CPI+0% prices;
- Ofcom has concluded, without presenting supporting analysis, that since additional FTTP network investment will deliver consumer benefits so will additional leased line network investment. This ignores the significant differences between these two markets – most obviously we already have leased line networks across the UK and another leased line network will (unlike FTTP) deliver no quality uplift when compared with the existing networks;
- Ofcom defined a single economic market (Area 2, 70% of UK) covering all areas where there is an existing or planned rival network. This includes localities with very different competitive conditions – including all these localities in the same economic market and imposing the same remedies will cause inevitable consumer harm;
- Ofcom calls it proposed CPI+0% indexation approach for MPF/FTTC 'price continuity' when it clearly diverges from the historic approach – we are unclear as to why Ofcom has misdescribed its proposal in this way. Furthermore, Ofcom's claim that the CPI+0% approach has led to recent investment announcements is unevidenced and baseless;
- Ofcom argues that the RAB approach will encourage altnet FTTP investment in Area 3 since prices will be above cost but ignores the far bigger harm to altnet investment from the RAB approach (about 25 times as large) of altnets having to compete against a subsidised Openreach;
- Ofcom has not considered asymmetries in constraints which would lead to FTTP (in WLA) and dark fibre (in BCM) being defined as separate economic markets;
- Ofcom has not made any meaningful attempt to assess whether the benefits of its proposals outweigh the costs – in most cases it has not even attempted to identify the overall increase in consumer prices.
- Ofcom claimed that adaptive regulation would raise legal issues since it would not address the risk of price distortion but failed to question whether RAB approach would meet this same legal test (which it does not), or would represent state aid (which it may);
- Ofcom has not taken account of or responded to many of the comments made by stakeholders in previous consultations – for instance, that there is little benefit from additional leased line networks, asymmetries in constraints exist, and that there is harm from a RAB approach.

2.5 It is essential that Ofcom's final decision addresses these failings or regulation will not deliver investment and consumer protection. Ofcom must both complete analysis of the impacts of its regulation and do so in an even-handed manner that is genuinely seeking the best regulation for consumers, rather than simply defending its previous proposals.

2.2 Impact of Covid-19

2.6 We briefly discuss below the impact of Covid-19 on the UK economy, the telecoms sector and regulation.

2.7 Though we will not know the full impact of Covid-19 for many months (or years) a picture of the likely impacts is becoming clearer. It seems likely that during the lockdown period public debt will have increased by c.£300 billion and the economy will have shrunk by at least 10%-15% – the largest contraction in over two centuries. Once lockdown is eased the economy will bounce back but it is not likely to return to its pre-Covid-19 position for several years. Thus much or all of the market review period will be subject to a recession including lower output, higher unemployment, reduced household and business income levels, more debt and less available credit.

2.8 For the telecoms sector the impacts will be a little different from the economy as a whole.

2.9 Though residential income levels (and therefore willingness and ability to pay) will fall, the demand for broadband lines from households will likely remain at pre-Covid-19 levels as there will be more home-working – though in general FTTC and DOCSIS speeds are adequate for home-working. For businesses the picture is likely to be different – business failures, site closures and more home-working will lead to less demand for circuits and less demand for higher bandwidths. Demand for inter-exchange circuits used for backhaul should be broadly unaffected unless 5G rollout is delayed. The recession will also enlarge some vulnerable groups such as those on low incomes.

2.10 There are a number of factors that affect investment – project viability, capital availability and implementation. Here we are particularly interested in investment in FTTP networks and leased line networks.

- Viability of FTTP investment will reduce since there is likely to be less willingness/ability to pay a premium for FTTP services. Viability of leased line network investment will reduce as demand falls due to business bankruptcies and consolidation.
- Private capital is likely to be less forthcoming in the next 2-3 years due to reduced returns on investment and greater uncertainty increasing hurdle rates.
- Implementation will in some respects get easier: higher unemployment will increase the pool of suitable UK labour (though will need training); though over the next 6-12 months continuing social distancing, absenteeism, self-isolation and quarantining may slow construction and accessing customers home. Brexit and travel restrictions will reduce access to skilled overseas labour.

2.11 The net effect of lower viability, less capital and slightly improved implementation will be less investment, particularly in the leased line market.

2.12 Thus the telecoms sector will see significant changes: similar level of demand from residential services though less willingness to pay premium prices for FTTP; materially less demand for leased lines; and a slowing of network investment. Ofcom must take stock of the current situation and properly consider whether and how it should adapt regulation. It is implausible that regulation for the 2021-6 market review period would not need to need to change to reflect such substantial changes in the economy.

2.3 Timing

2.13 Ofcom's Plan of Work for 2020/21 outlined that Ofcom still intends to complete the WFTMR and publish its final decision at the start of 2021 so that new regulation will be introduced in April 2021. Whilst we are keen for new regulation to be in place as soon as possible, we think Ofcom's plan is unrealistic and will result in significant damage to consumers' interests. Even before the Covid-19 pandemic that date was challenging – Ofcom has missed many market review deadlines over the last ten years and this is a far larger and more complex review. Developments over the last two months make reaching a robust final decision by the beginning of 2021 unrealistic:

- about 6-8 weeks has been lost due to the delay in submissions (if one assumes that Ofcom takes the same account of submissions as was previously planned);
- Ofcom's effective capacity over the next 6-12 months will reduce due to home-working, illness of staff members and childcare issues;
- Ofcom has considerable additional analysis to complete and may need to re-consult on changes to its regulatory proposals;
- the market environment is evolving rapidly, with agreements being signed between FTTP builders and CPs to support FTTP rollout that Ofcom needs to reflect in its proposals; and
- Ofcom needs to consider the impact of the recession on what regulation is appropriate.

2.14 Therefore we urge Ofcom to rethink its timing so that it can deliver regulation for the next five years that will deliver on Ofcom's objectives for accelerated FTTP investment and consumer protection.

2.4 Outline of submission

2.15 The structure of this submission is outlined in the following table.

Table 2.1: Structure of submission

Section	
1	Summary
2	Introduction
3	Market context
4	WLA – market analysis
5	WLA – price remedies
6	WLA – other remedy issues
7	Business connectivity – market analysis and remedies
8	Passive infrastructure – market analysis and remedies
9	Equality impact assessment
Annex	

2.5 Summary of errors and mistakes

2.16 We provide below a table summarising the key errors Ofcom has made and suggested approach to correct.

Table 2.2: Summary of concerns and suggested rectification

Area	Concern	What Ofcom should do
Market structure		
FTTP overbuild (section 3.1)	Ofcom assumes that altnet FTTP will overbuild Openreach FTTP and *vice versa*	Consider commercial dynamics and incentives to overbuild Consider implications that most areas will not become effectively competitive with three ultrafast providers
Altnet FTTP build projection (section 3.2)	Assumed 10m homes passed by 2026 which we consider is optimistic	Assess whether this level of build is realistic given changed economic environment and adjust accordingly
Uncertainty in altnet FTTP build (section 3.2)	Not considered certainty of build – effectively Ofcom betting on one scenario materialising	Assess how regulation might need to change in the case where altnet build is lower and/or design regulation so that effective if less build
WLA market analysis		
Product market definition (section 4.1)	Started with broad product market comprising copper, FTTC, DOCSIS and FTTP thereby not considering switching between products (in either direction)	Start market analysis with each product as focal product Consider whether FTTP in a separate market due to asymmetries of constraint
Geo market definition (section 4.2)	Geographic unit of postcode sectors too large	Assess practicality issues with using postcodes and consider whether appropriate given benefits
	Competitor set excludes broadband only networks	Objective assessment of whether broadband only networks should be included
	Network coverage threshold at 50%	Leave at 65% unless sound economic basis to reduce
	Area 2 not sufficiently homogeneous	Create three different geographic markets (which we refer to as 2a, 2b and 2c)
	Area 1 – criteria to be included are vague since networks need to be 'established'	Define an objective measure for whether locality assigned to Area 1
SMP assessment (section 4.3)	Agree with conclusions for existing economic markets though not robust	Will need to reassess SMP if redefine markets to address market definition errors
WLA Area 2 remedies		
Price remedy (section 5.1)	Ofcom's view that CPI+0% indexation of wholesale MPF/FTTC prices will result in more FTTP investment entirely depends on two assertions: 1 higher w/s FTTC prices will have "*significant and positive*" impact on FTTP investment 2 higher w/s FTTC prices will not "*significantly damage*" ISP share and altnet investment Analysis indicates these are not true	Accept analysis TalkTalk provided or develop / complete own analysis of impact
	Not assessed whether benefits from network investment outweigh cost from higher prices	Conduct proper cost-benefit analysis
	Describing CPI+0% as price continuity is factually incorrect	Describe as 'CPI+0% indexation' or 'price discontinuity'

	Claim that recent increase in FTTP investment plans due to CPI+0% idea is unsubstantiated	Provide evidence of link or withdraw claim
Comparison CPI+0% and adaptive regulation (section 5.2)	Overall assessment was partial and lacked evidence: • Assertions on impact wholesale price on altnets wrong • Did not consider protection from predatory pricing (where CPI+0% inferior) • Did not consider direct impact of higher wholesale FTTC prices on Openreach incentive (where CPI+0% inferior) • Claims regarding more jeopardy with CPI+0% wrong in principle and disproven in practice • Claim investors will not understand adaptive since "*remarkably unsophisticated*" • Claim CPI+0% delivers price continuity which is patently incorrect. Adaptive provides more continuity • No economic basis for claim Openreach will divert excess FTTC profits into FTTP investment • Criticised (only) adaptive regulation for possibility of excessive prices but risk and impact both worse under CPI+0% • Criticised (only) adaptive regulation for 'legal issues' though CPI+0% would face same issues	Conduct an even handed and objective comparison of all benefits and all costs of each approach against the same criteria. Ensure comparison is economically sound and evidence based
Different levels of indexation (section 5.4.1)	Ofcom not considered whether alternative levels of indexation e.g. CPI-2% rather than CPI+0% would better meet consumer interests	Consider alternative indexes that provide sufficient 'headroom' for REO FTTP entrant
WLA Area 3 remedies		
Options (section 5.1.1)	Considered only RAB and very briefly 'no subsidy' and copper wedge	Also consider adaptive regulation (as proposed by TalkTalk)
RAB approach (section 5.5.4)	Not considered wider impacts of RAB e.g. altnet FTTP investment in Area 3, Openreach FTTP investment in Area 2, vulnerable customers / digital divide	Properly assess all impacts of RAB approach and do comparison of costs and benefits
	Not considered legality of RAB	Conduct legal assessment of RAB approach that is consistent with legal assessment of adaptive regulation and copper wedge Conduct state aid assessment of RAB approach
Glidepath for MPF/FTTC prices (section 5.5.7)	Proposed glidepath (rather than starting charge adjustment) for MPF/FTTC prices in Area 3 will harm customers and is inconsistent with own policy	Follow own policy unless clear and cogent reasons to depart
Area 1 remedies (section 5.6)	Not proposed since no areas assigned to Area 1	Consider appropriate remedies depending on form of SMP
FTTP price premium		
Willingness to pay for speed (section 6.2.1)	Willingness to pay for higher speed based on retail price differences	Conduct survey to assess willingness to pay for higher speed
Willingness to pay reliability (section 6.2.1)	Assumed consumers not willing to pay for higher reliability	Conduct survey to assess willingness to pay for higher reliability
Costs savings (section 6.2.2)	Unclear what approach Ofcom taken to exchange based cost savings	Approach must be based on incremental saving

Copper retirement		
Inclusion of G.fast (section 6.3.4)	Relaxation of MPF/FTTC regulation based on G.fast and FTTP coverage	Relaxation only based on FTTP coverage
Time before relaxation (section 6.3.6)	Period between FTTP build and withdrawal of MPF/FTTC price regulation too short	Withdrawal three years after 75% coverage reached and at least one year for every customer
Relaxation conditions (section 6.3.5)	Relaxation of regulation based on coverage triggers	Only allow relaxation if certain operational readiness requirements met
Leased lines market		
Data used (section 7.1)	Uses out date data (from December 2017)	Use up to date data
Use of appeal evidence (§7.8)	Not relied in WFTMR on new evidence relied upon in appeal of BCMR19 despite WFTMR following BCMR19 approach	Explain why it has not relied on this new evidence – for instance, is it not relevant given some change of circumstances, or is it no longer correct?
Assessing dark fibre market (section 7.2.2)	Not conducted market analysis starting with dark fibre as focal product	Conduct market analysis starting with dark fibre as focal product (for both access and inter-exchange circuits)
Geographic market analysis (section 7.3)	Geographic market analysis uses two different (and individually flawed) methods	Develop a single method that addresses flaws in other two methods e.g. buffer distance, which networks included, coverage of large business premises
CLA SMP (section 7.4.1.1)	No SMP finding in CLA	Objective assessment whether Openreach holds SMP in CLA either on basis of 'average' conditions or due to pockets of SMP
Inter-exchange circuits (section 7.3.3)	Defining inter-exchange markets based on exchange presence systematically over-estimates level of competition	Preferably, define markets by route. If not, demonstrate quantitatively that over-estimation is trivial, or adjust SMP findings and remedies to reflect lower competition
Objectives (section 7.5.1)	Set objective of encouraging leased line network investment without considering whether benefits outweigh the costs of doing so	Assess whether higher prices/ limited DFA result in material additional leased line network investment and whether benefit of this outweighs harm from higher prices / limited DFA
CPI+0% indexation (§7.157)	CPI+0% in Area 2	Reassess whether prices above cost (on DFA or Ethernet) deliver consumer benefits
Limited DFA (section 7.5.3)	Limited DFA availability in access and inter-exchange markets	Reassess whether DFA required to address SMP in dark fibre market or leased line market and benefits consumers
PIA (section 8.2)	Openreach holds SMP in area C and D	Reconsider whether area D a separate market and whether Openreach holds SMP
Equality impact assessment (section 9)	Ofcom assessment is cursory, incomplete, deficient and inaccurate	Conduct assessment taking into account impacts on groups with protected characteristics

3 Market development

3.1 In this section we discuss a number of aspects of how TalkTalk expects the WLA market (particularly in Area 2) will develop in the upcoming market review period, and how those developments will affect the regulation that Ofcom should impose. In particular we review:

- whether Openreach and altnets are likely to build FTTP in the same areas (i.e. 'overbuild' one another) and the implications of this for the development of effective competition; and,
- the likely level of altnet FTTP build and the certainty around this

3.1 Overbuild and development of effective competition

3.2 Ofcom's objective in Area 2 (i.e. the 70% of the UK where there is existing or planned competition) is for competition between networks to develop that results in effective competition so that no operator has market power and regulation is not required. For instance:

> *"[we will set] regulation to create appropriate conditions to incentivise both Openreach and other operators to invest in fibre networks … The resulting network competition should protect consumers in the long term and allow deregulation in certain areas."* (V1 §2.9-2.10)

3.3 As Ofcom recognises, effective competition requires competition between at least three networks:

> *"… we do not consider the competitive constraint from Virgin Media sufficient to constrain BT's market power alone. Two players is not sufficient to deliver effective competition in this market."* (V4 §8.54)

3.4 Thus Ofcom's implicit objective (and presumably why it has described Area 2 as 'potentially competitive') is for effective competition between three networks which would allow regulation to be withdrawn. These three networks must all be FTTP or DOCSIS networks: in the medium term a copper/FTTC network will not be an effective competitive constraint on an FTTP/DOCSIS network since it has a much lower maximum speed (80Mbps download) and lower reliability than FTTP and DOCSIS (as Ofcom states at §A22.12). Therefore Ofcom's expectation in Area 2 is for competition between Virgin Media's DOCSIS network, an altnet FTTP network and an Openreach FTTP network[1]. We consider that this market outcome is unlikely to materialise in the majority of Area 2. We explain our reasoning below.

3.5 In the parts of Area 2 where there is no Virgin DOCSIS network, there can only be effective competition if there are three FTTP networks (Openreach and two altnets). This is

[1] The possibility of two altnets building FTTP networks in a locality is very remote since they would both be competing for the non-BT, non-Virgin market which in total is about 40% meaning that on average they would only achieve 20% market share each which is too low to be viable.

implausible since the market could not bear the cost of three new networks (see footnote 1 above). These areas represent about one third of Area 2[2].

3.6 In the parts of Area 2 where there is Virgin DOCSIS network, effective competition could only develop if an altnet and Openreach both build FTTP networks – this requires one to overbuild the other e.g. CityFibre build first and then Openreach or *vice versa*. This is unlikely since each network will look to avoid building where the other has already done so, and will instead look to build in areas where there is no FTTP since the returns as a second FTTP network are much lower than as the first entrant, and in most cases are negative[3]. There are a number of reasons for this:

- FTTP networks have high fixed and sunk costs[4] which require high market shares for investment to be viable. [✂]. Altnets such as CityFibre can only achieve sufficient market share by securing wholesale agreements with large 'independent' ISPs (i.e. non-BT, non-Virgin ISPs such as Sky, TalkTalk, Vodafone) who can quickly migrate large volumes of customers to the altnet FTTP network[5].
- There are strong incentives and rationale for FTTP builders to de-risk their investments by securing volume commitments with independent ISPs [✂][6]. [✂][7]. [✂].
- even absent a volume commitment, once a wholesale customer has migrated customers to one FTTP network they are unlikely to then migrate them onto a second FTTP network – this is because migrating will have significant financial cost (e.g. £190 connection cost[8]), disruption for the customer (since a home visit is required) yet would provide little or no benefit in terms of higher speeds or greater reliability.
- The viability of FTTP in those parts of Area 2 where there is Virgin DOCSIS is in any case more marginal, since Virgin has about 40% market share[9] and switching customers to another network is costly. Though Virgin's share would reduce if FTTP were built out, growing market share will be more difficult than in areas where there is no Virgin DOCSIS.

3.7 The combined effect of these features is that both Openreach and altnets will predominantly roll out FTTP in areas where there is no existing FTTP, certainly whilst there are lower cost areas with no FTTP; and may also seek to avoid areas where Virgin Media is present.

- For altnets it will not be viable to build FTTP after Openreach has done so, since independent ISPs' customer bases will effectively be committed to Openreach and be

[2] V2 Table 1.2 Virgin Media 14.7m premises passed in UK. Some of these will be in Area 3 (but fall below the 50% threshold to be counted). Assume that Virgin passed 14m homes in Area 2 of 21.3m homes in area 2 i.e. 66%.

[3] [✂].

[4] See for example, V2 §8.17, §8.56

[5] See for example, V2 §8.59

[6] [✂].

[7] [✂].

[8] This is Ofcom's assumption for the capital cost of providing a connection to a network – see Annex 2 §2.2 to this submission

[9] V2 Table 8.1 shows that BT has ~60% share in areas where Virgin is present.

inaccessible to the altnet. Even if ISPs did not have volume commitments with Openreach the difficulty and cost of switching customers already migrated to the Openreach FTTP network onto the altnet FTTP network will make entry after Openreach unprofitable; and this difficulty will increase the longer the gap between Openreach roll-out and the altnet entering[10]. Winning customers at the retail level from another FTTP network will also be difficult– satisfaction levels for customers on FTTP will be higher since speed is more reliable and fault levels are lower. Altnets will rationally focus their investment in areas where they are the first FTTP network, providing them with the opportunity to obtain some degree of market power, and where returns are therefore more attractive. There is no rationale for them to build in areas where Openreach has already built FTTP.

- For Openreach there are similar considerations except that they are likely to be able to rely on BT as an anchor customer even if they enter second. However, even with BT as an anchor customer, Openreach will rationally focus on investing in areas where altnets have not rolled out FTTP since this will provide significantly higher returns due to the obtainable volumes from independent ISPs. Openreach might have incentives to focus its FTTP roll-out on areas where altnets have recently built or plan to build in order to strategically deter altnet entry. However, we assume that this will be prevented by Ofcom regulation – Ofcom is aware of this threat and has measures in place to detect it[11]. In any case, if it did occur altnet FTTP build would slow thereby reducing the prospects of overbuild elsewhere.

3.8 [✂] However, we would expect each of them to adjust their plans if they see that the other has built first in a target town/city. They might shift investment to other unserved towns/cities or not make an investment if no suitable candidates investments exist. [✂]

3.9 Vertically integrated operators that rely on retail sales such as Gigaclear and Hyperoptic will not materially change this picture of altnets not overbuilding and of the market outcome not being effective competition.

- The viability of their FTTP investment is significantly reduced if they are second to market (as it is for wholesale providers such as CityFibre). This is because FTTP networks will lose their key selling point of being the only FTTP[12] service available – this will make growing retail share more challenging.
- In any case, these operators are according to Ofcom likely to have less competitive impact on the market. Ofcom itself considers that the competitive impact of these operators (which tend to offer broadband only) is likely to be limited. In its geographic market analysis which assesses competitive conditions Ofcom does not take into account broadband only networks since, it appears, that they considered that they would not "*would add to the competitive conditions*" (V2 §7.63). Enders has a similar view that the viability of this model is questionable and so they are likely to have a limited impact: "*In reality, a retail focus is usually an unwanted necessity*

[10] Since more customers will need to be migrated from Openreach FTTP.

[11] Delivering a more independent Openreach, Annual Monitoring Report, 3 July 2019 §§5.25-5.26

[12] In practice, Hyperoptic provides a fibre to the building (FTTB) service rather than FTTP (or full fibre) and so the service is shared and contended.

rather than a bonus".[13] TalkTalk therefore expects that some vertically integrated operators will switch to a model with third party sales over time, switching them to having the dynamics outlined in §3.6 above.

3.10 The FTTP market therefore has the characteristics of a 'winner takes all' market where the first to market will be the only profitable network. Therefore, there is competition or a 'race' to be the first FTTP network in an area but once the first network is built a second network is not viable.[14] The key underlying reason for this is that the factor that makes one network viable (committed volume from ISPs) makes a second network unviable. For example, Enders Analysis recently wrote[15]:

> *"Ofcom regards these rules as giving economic room for altnet competition in Area 2, even when they are in competition with both Openreach [FTTP] and Virgin Media in a particular area … We respectfully disagree as we do not regard Ofcom's assumptions as being realistic as we detail later in this report, but nonetheless Ofcom's view is that full overbuild is economically viable".*

3.11 Whilst we do not expect systematic or widespread overbuild in this market review period there will be cases where overbuild does occur, for example: where both start in different areas of the same city; at the edges between two towns being built by different operators[16]; where an altnet already has some assets which it wishes to reuse in an area where Openreach has built FTTP; or where either network has made commitments and sunk some of its costs before they discover the plans of the other. Some overbuild may also occur beyond this market review period if all the lower cost areas are all built (i.e. the 'low hanging fruit' has been picked) and if costs reduce significantly. However, this is beyond the view of this review and in any case highly speculative so is not relevant to setting regulation in this market review period.

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[13] Enders Analysis, Winners and losers as the UK fibres up, January 2020. They also commented: "*However, the retail broadband market is very competitive, and attacking this market with an unknown brand and very limited scale leads to significant start-up losses, which will prove indefinite …*

Anecdotally, a number of these providers have struggled to acquire customers, with the sole differentiator of offering ultrafast speeds of only marginal help given current demand. Their marketing focus is typically on deeply discounted prices for superfast speeds, as opposed to premium prices for ultrafast speeds, supporting this view.

In reality, a retail focus is usually an unwanted necessity rather than a bonus, with the large ISPs unwilling to use a wholesaler of very low scale and limited track record, despite the superior speeds available. A retail element can enhance or enable other models as discussed below, but on its own it does not transform altnetco's fortunes."

[14] The market is therefore analogous to the R&D market, where there is often assessed as being a 'race' for patents, which has spawned a significant economic literature.

[15] Enders Analysis, Winners and losers as the UK fibres up, January 2020. The report also commented: "*While this is not explicitly stated anywhere in the document, Ofcom is clearly not just allowing, but assuming and expecting that Openreach will overbuild any alternative networks that develop (at least in urban and suburban areas). While this is very much in line with previous government and Ofcom proposals, it is at odds with how alternative network investors appear to see the market, with their expectations being that their investments achieve localised quasi- monopolies as usually occurs with infrastructure investment*"

[16] For example, if CityFibre build in Leeds and Openreach in Bradford it is possible that both may end up building in some of the suburbs that sit between the two cities.

3.12 Thus, we consider that Ofcom's view that there will be extensive overbuild of FTTP networks and therefore that there will be effective competition in Area 2 is unrealistic. This has a number of consequences for the market and for regulation, for instance:

- In most of Area 2 there will continue to be an operator with SMP and remedies will continue to be needed to address this operator's SMP. Therefore, regulation in this period should not be seen as a part of a transition to no regulation, but rather a period when regulation will change as the UK broadband market moves between different stable regulatory structures.
- There is little benefit to measures to encourage overbuild (e.g. preventing Openreach from agreeing minimum volume commitments) since Ofcom's measures will be irrelevant; it simply will not happen.
- [✂].
- In subsequent market reviews Ofcom may need to impose regulation on a wider range of network providers than just Openreach, as some altnets may acquire significant market power in parts of the country.

3.13 Lastly, though not determinative of regulation it is misleading to describe Area 2 as 'potentially competitive'. Under Ofcom's own assumptions, in the vast majority of Area 2 there will not be effective competition even at the end of this period[17] and in most of Area 2 effective competition is unlikely in the longer term.

3.2 Level and certainty of altnet build

3.14 Ofcom's proposed regulation is based on about 10m[18] premises being passed by altnet MSN FTTP networks in March 2026[19]. This are similar to the combination of the build ambitions of CityFibre (8m) and Virgin[20] (2m).

3.15 [✂][21][✂][22]. [✂]

[17] The only part of Area 2 where there might be effective competition in this market review period is in Area 2a (16%) where is BT, and Virgin DOCSIS are already present, and altnet build is planned will depend on Openreach building FTTP. See section 4.2.4.2 for explanation of Area 2a.

[18] V2 Table 7.2 shows that there are "*existing*" 0.55 rival MSNs nationally [= (2 x 0.05 + 1 x 16.8) / 30.5] and Table 7.3 shows that the "*existing plus planned*" is 0.91 [= (2 x 6.5 + 1 x 14.8) / 30.5] – a difference of 0.36. Given 30.5m premises this implies that planned MSNs will pass 10.2m premises. This will not be exactly the same as the forecast build by MSNs since an MSN is counted as covering the entire postcode sector if it has greater than 50% coverage of that postcode sector – this could result in the 10.2m figure being below or above the level of forecast build. Also there might be overlap between planned MSNs.

[19] 10m is the additional build from the 'existing' level. Ofcom does not explain when this 'existing' level is but we presume it is mid to late 2019.

[20] V2 §8.51 "*Virgin Media has passed 15 million premises with connections capable of providing UFBB, and intends to have passed 17 million premises by 2025*"

[21] [✂]

[22] [✂]

3.16 [✂][23][✂][24]. [✂][25][✂][26],[✂].

3.17 [✂].

3.18 [✂]:

- [✂][27];
- [✂][28][✂][29][✂];
- [✂];
- [✂];
- [✂];
- [✂][30][✂].

3.19 [✂].

- [✂].
- [✂].
- [✂].

3.20 [✂][31]. [✂]:

- [✂]; and,
- [✂].

3.21 We asked Ofcom for its view on the impact of forecast error. Ofcom responded[32] that: "*We recognised the uncertainty around investment plans, for example as stated in V2 7.43 and 8.47, and took this into account when developing our remedies proposals*". These paragraphs merely articulate the high level of uncertainty. It is not clear if or how Ofcom has taken the uncertainty into account in its remedies; much less how it will account for increased uncertainty due to the Covid-19 pandemic.

[23] [✂]
[24] [✂]
[25] [✂]
[26] [✂]
[27] [✂]
[28] [✂]
[29] [✂]
[30] [✂]
[31] [✂]
[32] Clarification question 8

4 WLA – market analysis

4.1 This section provides TalkTalk's analysis of Ofcom's market analysis and market power assessment in the WLA market.

4.2 The leased line market and passive infrastructure markets are dealt with in sections 7 and 8 respectively.

4.1 WLA – product market definition

4.3 Product market definition is the first stage in determining whether any provider, and if so which provider, holds significant market power in any telecoms market. Until product market definition has been undertaken, it is not possible to define geographic markets, as the geographic scope of markets can differ radically from product to product.[33]

4.4 Product markets are defined by assessing whether different products substitute for each other in the sense that it would be profitable for a hypothetical monopolist of one product (the 'focal product') to increase prices by a small but significant amount. If they cannot due to substitution to another product then this second product is included in the same product market, as it imposes an effective competitive constraint on the focal product. The market is iteratively expanded until a product set is reached which can profitably be monopolised; this is then the relevant market for competition analysis. In this section we comment on various aspects of Ofcom's market definition proposals. We discuss in turn:

- the appropriate focal market;
- types of substitution;
- substitution between broadband products;
- Ofcom's analysis of switching between broadband speeds; and,
- substitution by non-broadband products.

4.1.1 *Focal market*

4.5 When defining markets, it is important to start with the narrowest possible market definition. Failing to do this means that markets can be defined too widely (i.e. products are included in the same market when they do not impose competitive constraints on each other). Further, asymmetries in product market definition can be missed and not properly taken into account if focal products are not as narrow as possible. In order to avoid these errors, the narrowest conceivable focal market should be used.

4.6 Ofcom's initial choice of focal product market is set out at V2 §6.25 as follows:

> *We propose to define a focal product to be the supply of WLA services by fixed networks to support the delivery of broadband services to residential and business customers. This*

[33] For example, flights to the Seychelles and to the Maldives could plausibly be substitutes for one another; a supermarket in the Seychelles would not compete with a supermarket in the Maldives.

follows our approach in previous reviews in recognising the economies of scope inherent in supplying multiple downstream broadband services from a single access connection.

4.7 It is notable, as Ofcom concedes at V2 §§6.27-6.28, that in this review it has adopted a broader focal product market than in the previous 2018 WLA statement, which commenced from a narrower focal market which did not include cable services. The rationale for this decision appears to be that "*the range of retail services and packages delivered over these different types of networks will have similar features, with the new networks able to offer improved quality*". This appears to be a self-contradictory statement – Ofcom is saying that new services are the same as previous ones, but have higher quality. This demonstrates the inappropriateness of Ofcom's proposals in this regard; higher quality is clearly a product feature which could drive products to be in different markets.

4.8 This focal market is inappropriately broad and focal products should be defined by network type and/or by product. There is generally supply side substitution between different speeds on the same network (e.g. between FTTC 40/10 and FTTC 80/20) since there is little cost involved in a provider of one product switching supply capacity (say, for FTTC 40/10) to another product (FTTC 80/20) and *vice-versa*. Therefore, products of different speeds on the same network are supply-side substitutes and can be considered to be in the same product market. However, Ofcom's analysis (§§6.34-6.52) of demand-side switching between different speeds on the same network is irrelevant to switching between different network technologies, and overlooks significant differences in the capabilities of different networks such as maximum speed, future proofing, speed consistency, reliability and quality of service.

4.9 Therefore, product market definition here depends on substitution between products delivered over different networks (i.e. the analysis should be network-centric rather than speed-centric). Fixed line telecoms services are delivered using various network technologies– ADSL, DOCSIS, FTTC and FTTP. Each of these types of network offers products with very different capabilities, which have the potential to mean that there is no substitution between products or the substitution is asymmetric (in that network A constrains network B but network B does not constrain network A). Thus in defining product markets Ofcom needs to be careful not to presume that because substitution acts in one direction it also acts in the other direction.

4.10 In light of potential asymmetries, and the ability to supply-side substitute between different speeds of product offered on the same network, Ofcom should adopt four focal markets for the current product market definition exercise, each of which has distinctly differing capabilities and characteristics:

- *copper only (ADSL) networks*, which are available nationally via Openreach. These networks are now experiencing sharply declining market share as the speed they offer is no longer suitable for modern internet usage levels;
- *copper/ fibre hybrid (FTTC) networks* are available to over 95% of premises and are currently the most commonly used type of network in the UK[34];

[34] As at March 31 2019, 13.8m FTTC vs 6.7m copper only (Source: BT KPIs).

- *cable (DOCSIS) networks*, which are offered by Virgin Media to around 50% of UK premises and account for about 20% of broadband connections; and,
- *full fibre (FTTP) networks*, which are available to around 10% of UK premises and have been mostly constructed in the past few years.

4.11 The future of each of these networks differs significantly. FTTP networks are being built rapidly at present and is the efficient modern network structure. Conversely, there will be no future entry into copper only networks and FTTC networks and these networks are likely to be progressively closed in many areas over the next 5-15 years: both copper only networks and FTTC networks are therefore now legacy networks using outdated technology.[35] The DOCSIS network is unlikely to be materially rolled out further, other than for infill.

4.1.2 *Types of substitution*

4.12 There are three different types of substitutability which need to be considered when determining whether products are substitutes:

- *supply-side substitution*– the prospects for a provider offering one product (say, DOCSIS based) to switch at low cost and within two years to offering another (say, FTTP based) in the same area;
- *demand-side substitution at wholesale level*– the prospects for demand to be switched between different networks by downstream CPs weighing up which network offers them the best value for money to meet customers' needs. This type of substitution is only likely to occur for the customer bases of independent CPs such as Sky, TalkTalk and Vodafone; vertically integrated retailers such as Virgin Media and BT Group are unlikely to switch, given the reputational costs and loss of upstream margin that would be entailed by doing so.
- *demand-side substitution at retail level*– the prospects for demand to be switched between different networks through individual retail customers choosing to switch their demand between CPs which offer services over different networks.

4.13 Ofcom has not considered the potential for switching at a CP level between different networks: it is this switching, with its ability to transfer a large volume of customers from one network to another in a relatively short space of time, which will be one of the major drivers of competition between networks. Ofcom should revise its product market definition, taking into account this potential form of demand-side substitution.

4.1.3 *Substitution between broadband products*

4.14 On **supply-side substitution**, it is unlikely that an operator of one network can switch quickly and costlessly enough to provide a different network (e.g. DOCSIS network switching to provide FTTP) to meets the test that for there to be supply side substitution. In order to meet this test, capacity switching must:

[35] G.fast is a subset of FTTC network technology in this context.

- make use of substantially the same assets;
- be at low cost; and,
- be achievable within two years.

4.15 It takes considerable time to plan, obtain planning permission and streetworks consent for, hire staff to construct and then actually build a network, even with passive assets such as duct already in place. A large scale switch of capacity for a major network is likely to be a multi-billion pound project, taking many years, as shown by Openreach's projections of a cost in excess of £10 billion for upgrading its copper/FTTC network to FTTP. These substantial costs and time delays rule out supply-side substitution between each of the four network types.

4.16 Although Ofcom points to the usage of PIA as having potential to speed entry and reduce the costs of rolling out FTTP, this cannot generate supply side substitution: supply-side substitution involves capacity being switched from one market to another; the use of PIA is new entry, as it is an expansion of networks and network capacity, rather than the switching of that capacity.

4.17 On **wholesale demand-side substitution**, switching from copper only/FTTC to FTTP is likely in response to a SSNIP on copper only/FTTC; this would amount to the acceleration of a change which will in any case have to be made within the next few years. It therefore does not lead to additional costs for a wholesale customer, but rather reprofiling those costs so that they are incurred earlier.

4.18 However, it seems clear that CPs would not switch their demand from an FTTP network to other inferior types of network (i.e. copper, FTTC or DOCSIS) in response to a SSNIP on FTTP. Doing so would not be commercially viable:

- the savings from such a switch would be limited. [✂].[36][✂].
- the switch is unlikely to be welcomed by customers resulting in loss of customers[37] or the CP incurring significant costs to entice customers to agree to the switch. The reason for this is that a customer switched from FTTP to an inferior network would face reduced quality (speed and reliability) from what they are accustomed to and would also suffer the inconvenience of a home visit to conduct the switch.
- there would be considerable costs from the switching process itself, both in terms of the organisational capacity required within the retail CP, and in the costs of termination fees on the FTTP network and new connection charges for the other network;
- subsequent to the switch to the other network there would be increased ongoing operating costs and churn for the CP due to the higher fault levels and resulting customer dissatisfaction;

[36] [✂]

[37] If Ofcom deemed the switch to be a material change of circumstances (as the quality of service to the consumer would be reduced), the operator might be obliged to allow in contract customers to exit their contracts early without penalty.

- the fixed costs incurred would have to be amortised over a limited period and, given the long term shift to FTTTP, would likely have to be reversed at some point. If the average broadband customer lifetime for a particular operator was five years, these costs would have to be amortised over approximately thirty months.[38] Openreach's and Ofcom plans for copper retirement may shorten this period even further in the case of a switch to copper or FTTC.

4.19 Overall, therefore, there is unlikely to be any scope for wholesale switching away from FTTP networks to copper, FTTC or DOCSIS in response to FTTP price increases.

4.20 [✂].

4.21 On **retail demand-side substitution**, there is likely to be switching from copper/FTTC/DOCSIS to FTTP in response to a SSNIP on copper/FTTC/DOCSIS. However, there is unlikely to be large scale switching away from an FTTP network to copper/FTTC networks to render a SSNIP unprofitable[39] since this would imply a customer accepting much slower speeds, higher fault rates, possibly a connection charge and need for in home works, in exchange for a relatively small saving of less than £1.50 per month.[40] Given the quality advantages of FTTP compared to DOCSIS, and the lack of push factors to generate switching, even consumer switching from FTTP to DOCSIS is likely to be limited.

4.22 These dynamics are confirmed by [✂].

4.23 Moreover, the strength of constraint on FTTP from wholesale and retail demand-side substitution is likely to reduce over the course of the next review period as customers' demands for both speed and quality increase.

4.24 Considering FTTP as the focal product, it is clear than copper and FTTC would not constrain a SSNIP on FTTP and therefore are not in the same market. Regarding DOCSIS, there will not be any supply-side substitution and wholesale demand-side substitution is unlikely. There may be some retail demand-side substitution though this is likely to be limited due to the inconvenience of the necessary home visit; the level of substitution will diminish over the market review period as demand for speed increases. Therefore, in the case where FTTP is the focal product it will result in a product market comprising (more likely) FTTP only or (less likely) FTTP and DOCSIS. Ofcom must define this market and also define appropriate

[38] Assuming that the average customer is half way through its time with the provider when the switch is made to the other network.

[39] Assume that the average (ex VAT) retail price is £30 per month for an FTTP product and the average wholesale price is £15 per month. Also, assume pass-through of wholesale prices into consumer prices of 80% (equivalent to four equal firms in Nash-Cournot equilibrium). A 10% wholesale price increase will then translate into a 4% retail price increase. Also, assume a cost structure for the FTTP operator which is 80% fixed and 20% variable with respect to customer numbers. The break-even critical loss for a firm with 80% margins is 11.1% (= 10/(10+80)). As such, a 4% increase in retail prices would need to cause an 11.1% loss of demand, implying an elasticity of demand of 2.78. This seems implausibly high given the lower quality of other products, and the series of switching costs which would need to be overcome. If the own price elasticity of demand is less than 2.78– as seems highly likely– then it would be profitable for a hypothetical monopolist over FTTP to impose a SSNIP, and FTTP would not be subject to effective competitive constraints from any other product.

[40] On the basis of a 10% SSNIP over a wholesale price for FTTP of around £15. This would be reduced be pass-through from wholesale to retail charges of less than 100%.

geographic markets then consider SMP assessment and, if SMP is found, impose suitable remedies.

4.25 Ofcom's analysis regarding the constraints imposed by different types of broadband network on one another omits a wide range of factors, and is solely based around speeds (V2 §§6.34-6.52). The primary omissions in Ofcom's approach are:

- Ofcom has not considered factors such as quality of service and future proofing, which potentially provide FTTP networks with an additional competitive advantage over FTTC and copper networks; and,
- Ofcom fails to consider asymmetric switching between different products, and its impact on market definition.

4.26 Ofcom should undertake a new analysis based on the different types of networks as the focal markets, and taking into account distinctions between the network types other than speed. This may lead Ofcom to different conclusions than those they have reached so far.

4.27 If Ofcom does not undertake such new analysis, it must recognise that the fundamental flaws in its market definition process mean that there is a significant risk markets have been defined excessively broadly, and contain products which do not, in actuality, impose effective competitive constraints on each other. In general, this means that Ofcom will miss areas where there is market power and accordingly should enforce stronger remedies (e.g. lower price caps) than with properly defined markets, as competition will be less effective in pushing prices towards the competitive level than would be implied by Ofcom's SMP assessment. Such stronger remedies are a second best outcome compared to accurately defining markets in the first place, but are also significantly better than the worst approach of failing to adjust remedies to reflect the flaws in market definition.

4.1.4 *Substitution by non-broadband products*

4.28 Ofcom considers the potential for leased lines to act as a substitute for broadband lines at V2 §§6.53-6.56, finding them to have distinct features. TalkTalk agrees with this. Leased line services are considerably more expensive than even FTTP services, tend to be offered on longer minimum contract terms, and offer features which cannot be replicated over broadband such as fully dedicated capacity and low rates of jitter and latency. As such, a 5-10% increase in the price of FTTP services would be most unlikely to be constrained by switching to leased line products. Furthermore, the mere fact that some FTTP providers also offer leased lines is not a reason to consider that the broadband and leased line markets are converged.

4.29 TalkTalk also agrees with Ofcom's views (V2 §§6.57-6.64) that throughout the course of the next review period fixed wireless, mobile and satellite technologies will not act as competitive constraints on fixed line broadband networks. All of these technologies are at present weak substitutes for fixed line broadband:

- fixed wireless offers relatively low speeds, along with capacity constraints which are likely to lead to data limits, and which consumers are likely to find unattractive in a market which has largely moved to unmetered broadband. In addition, fixed wireless is at present offered in few parts of the country;

- 4G and 5G mobile also place severe constraints on the amount of data which they permit customers to use, and 4G mobile offers lower speeds than FTTC, DOCSIS and FTTP; and,
- satellite services again impose significant data caps, and high latency for the current generation of geostationary satellites, while low earth orbit satellites are as yet an unproven technology.

4.30 TalkTalk also considers that Ofcom's proposal to find business broadband and consumer broadband in the same product market based on supply-side considerations (V2 §6.32) is correct. Business broadband and consumer broadband, served over the same network, can easily be switched between by a supplier, which will only have to change the service wrap.

4.1.5 *Conclusion on product market definition*

4.31 Both the analytical framework and the evidence base used by Ofcom to derive its product market definition are weak, and will need to be substantially improved and changed in Ofcom's final determination.

4.32 Ofcom has commenced from an inappropriately broad focal market including copper, FTTC, DOCSIS and FTTP networks. This has the practical effect of avoiding testing whether each of these networks constrains another network – for instance does FTTC constrain FTTP and *vice versa* – and whether asymmetries exist in product substitution. Ofcom has also failed to consider the role and impact of switching at the wholesale level or consider future conditions across the market review period.

4.33 We agree that when starting from a focal product of copper there is a market that comprises copper, FTTC, DOCSIS and FTTP, as copper is constrained by all the other superior quality speeds of network.

4.34 However, we consider that there is an additional and different product market. On the basis of TalkTalk's view of publicly available evidence and evidence from our business, although FTTP may constrain FTTC/copper the reverse is not true since there will be limited supply-side or demand-side substitution from FTTP to FTTC in response to a SSNIP on FTTP. As a consequence there is an economic market that includes FTTP or FTTP and DOCSIS but in either case excludes copper only/FTTC.

4.2 WLA - geographic market definition

4.35 As set out in section 4.1 above, TalkTalk has serious concerns about the approach to defining product markets adopted by Ofcom in its consultation. Once these problems have been resolved, the product market definition(s) may be different from those currently proposed, which may lead to a need to change geographic market definitions. However, the comments on geographic market definition in this section are based on Ofcom's proposed product market definitions. If Ofcom changes its product market definitions, it is likely that the appropriate geographic market definitions will also change.

4.36 Defining geographic markets in fixed line telecoms is unusual compared to geographic market definition exercises in many other sectors. In general, geographic market definition

proceeds by considering the geographic area within which consumers would be willing to move their demand in the case of a small but significant increase in price[41]. For example, supermarket geographic markets are generally defined in terms of the driving time which it takes from customers' homes to the various supermarkets in their area, and considers the manner in which these customers switch between different options.

4.37 Conversely, in telecoms markets domestic customers can only consume fixed line telecoms services at the home in which they live. The financial and time costs of moving house are such that no rational customer would move home in order to obtain broadband services at a 10% lower price. Therefore, on a purely economic basis, it would be appropriate to define around 30 million different geographic markets, each covering one premise.

4.38 Of course, 30m different geographic markets cannot sensibly be individually assessed. It is therefore necessary to aggregate them into groups for which SMP and remedies can be considered. Within each of these groups, conditions of competition need to be "*sufficiently homogeneous*"[42] that the same finding on SMP can be reached and the same remedies are appropriate.

4.39 Ofcom's proposed approach to geographic market includes a number of key assumptions which we discuss below:

- geographic units;
- competitor set;
- network coverage threshold; and,
- grouping into geographic markets

4.2.1 *Geographic units*

4.40 The first step in Ofcom's analysis is to determine the base geographic units at which it will conduct its first order assessment. Ofcom addresses this at V2 7.16-7.18 of its proposals:

> *In our December 2018 preliminary consultation on geographic analysis (the December 2018 Consultation), we proposed to reject individual premises (c. 30 million) as our geographic unit because of these practicality considerations. We expressed the view that BT exchange footprints (c. 5,600 contiguous areas) or postcode sectors (c. 10,000 areas) were our preferred candidates.*
>
> *Most stakeholders expressing a view favoured more granular geographic units such as postcodes (c. 1.6 million) or some alternatives, for example BT suggested mapping based*

[41] Alternatively, in some cases a supplier may be able to switch demand to different geographic areas e.g. a builder.

[42] Commission Recommendation 9 October 2014 on relevant product and service markets. Article 7: "*When defining relevant markets in accordance with Article 15(3) of Directive 2002/21/EC, national regulatory authorities should identify a geographic area where the conditions of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different, having particular regard to the ques-tion whether the potential SMP operator acts uniformly across its network area or whether it faces appreciably different conditions of competition to a degree that its activities are constrained in some areas but not in others.*"

on a squared-grid. No respondent supported the use of BT exchanges. Having considered these submissions, as set out in Annex 8, we propose to use postcode sectors.

4.41 TalkTalk continues to believe that the geographic units of postcode sectors proposed by Ofcom are too coarse to be sufficiently homogeneous within each postcode sector for competition analysis purposes[43]. Especially in rural areas, where postcode sectors can be large, and on the boundaries of towns, they can encompass a range of competitive conditions.[44]

4.42 An hypothetical example of this is in HG4 5, in Yorkshire, currently proposed to be allocated to Area 3. This postcode sector encompasses some of the eastern suburbs of Ripon (in particular Sharow), along with villages including Melmerby, Wath, and Marton-le-Moor. Suppose in this case that FibreNation (now owned by CityFibre), which is constructing its network in Ripon at present, plans to extend that network to cover parts of Sharow, but not to build in more distant villages; while Gigaclear builds in Melmerby, but not in any other part of the postcode sector. In this case, both networks will likely cover well below 50% of premises in the postcode sector and so not count as being 'present' in the postcode sector and so the postcode sector would be assigned to Area 3. As a consequence of this assignment, under Ofcom's remedies Openreach will be able to obtain cross-subsidy for roll-out of FTTP from MPF/FTTC products making further altnet FTTP roll-out unprofitable. Conversely, if postcodes were used by Ofcom as the geographic unit across competition was assessed, Ofcom's proposed remedies would be more suitable – the postcodes within the postcode sector where CityFibre or Gigaclear were building would be mostly assigned to Area 2 (and so not be subject to cross-subsidised competition from Openreach) whereas other areas where there was no or little altnet FTTP build would be assigned to Area 3.

4.43 This type of effect is likely to be widespread, and results from the wide range of competitive conditions which are likely to occur within an area as large as a postcode sector. The conditions of competition across postcode sectors will not be sufficiently homogeneous for the same SMP assessment and remedies to be appropriate.

4.44 The grounds for Ofcom continuing to use postcode sectors are unclear, in the context of an earlier consultation[45] which stated that Ofcom's views were preliminary, and the universally negative views of respondents. In response to the adverse evidence cited by respondents, Ofcom has not cited any evidence which would demonstrate that conditions of competition are homogeneous across such large units. Nor has Ofcom explained what the 'practicality' barriers are to using postcodes (rather than postcode sectors).

4.45 Full postcodes are, we consider, practical to be adopted, and Ofcom can define coverage at postcode level. TalkTalk understands that Ofcom has coverage data down to each postcode for existing networks (and possibly also for some planned networks). For planned networks (which are not mapped to postcode but Ofcom has already mapped to postcode sectors) Ofcom could assume that that the network will cover all postcodes within the postcode

[43] The problem of lack of homogeneity is amplified since though the average postcode sector contains 3,000 premises some are much larger.

[44] This can be seen by the fact that the proportion of premises in Area 2 is changed significantly by moving from a 65% homes passed threshold to a 50% threshold. See section 4.2.3 below.

[45] Ofcom, *Approach to geographic markets*, December 2018

sector unless informed otherwise by the altnet building the network. Thus there is little extra manual effort or additional staff time required. There will be more automated data processing required but this given low IT costs this should present little burden on Ofcom.

4.46 Therefore, TalkTalk continues to consider that full postcodes are the most appropriate geographic unit. If Ofcom wishes to use the impracticality of full postcodes as a reason for continuing to adopt postcode sectors, it should set out in more detail what the specific source of the impracticality is, and what methods for overcoming it Ofcom has considered and rejected.

4.47 There essentially appears to be no evidential support for Ofcom's current proposal. TalkTalk urges Ofcom to reconsider this misguided proposal, the main effect of which is likely to be to make remedies more imprecise, and harm consumers.

4.2.2 *Competitor set and roll-out projections*

4.48 Ofcom assesses the degree of competition in each postcode sector on the basis of the number of existing and planned networks in each postcode sector. The source for the number and location of planned networks is Ofcom's interpretation of altnets' stated plans.

4.49 Ofcom's approach has several weaknesses. Ofcom assumes that a network will be built even if many of the necessary steps, such as funding and permissions, are not in place – for example, Ofcom assumes that a network which is "In Planning" or "Pending Approval"[46] will be built. Ofcom's approach also fails to take account of the likely timing of build. For instance, a network that is currently 'in planning' (and so included in the build projections) may not actually be completed in this control period, and so will not have any material impact in competitive conditions across the period. Furthermore, if the operator only identified a town or city where it plans to build, but has not identified particular postcodes or postcode sectors, Ofcom has had to estimate where it thinks the network might be built (§A8.47). All these factors mean that there is likely to be material divergence between actual build and Ofcom's estimate of build.

4.50 Furthermore, Ofcom's approach implicitly assumes that large MSNs will pass 10m premises by March 2026. As we explain in section 3.2 this is optimistic, particularly in light of the Covid-19 pandemic (see section 2.2 above).

4.51 [✂].

4.52 In assessing the number of rival networks Ofcom has only included multi-service networks (MSNs) (specifically Openreach, Virgin Media, CityFibre and FibreNation) and has excluded broadband only networks such as Hyperoptic and Gigaclear. We disagree with certain aspects of Ofcom's approach.

4.53 Ofcom is wrong in categorising FibreNation's existing roll-out as an MSN since it does not offer leased lines and is a broadband-only network which would mean that, under Ofcom's flawed approach, it would be excluded from the assessment of rival networks.

[46] See Annex 8 Table 8.14

4.54 At V2 §§7.19-7.38, Ofcom provides its analysis of proposed rollout by MSNs across the UK. It has assessed three alternative MSNs to Openreach (Virgin Media, CityFibre and FibreNation) and their respective rollout plans across the UK. Ofcom states that it has specifically considered these providers as it expects much of the rollout in the control period to be driven by MSNs.

4.55 Since Ofcom's proposals were published, CityFibre has acquired FibreNation. Hence there are now essentially only two potential MSN competitors to Openreach rolling out in the UK at present: Virgin Media, which is planning limited additional rollout to premises amounting to less than 10% of UK premises, and CityFibre, [✂].

4.56 Other smaller potential MSNs, if Ofcom identifies any, should be given little or no weight by Ofcom in its geographic market analysis given they will have minimal impact on competitive conditions. These MSNs have little or no committed funding and have rolled out to no or very few premises. Since they lack scale they are also unlikely to wholesale to larger ISPs, limiting the impact they will have on the market.

4.57 However, it is unclear from Ofcom's consultation precisely why it confines its competitor set for its geographic market analysis to MSNs alone and has excluded broadband only networks. A possible reason is due to the vague 'market interactions' (such as FTTP competing for leased line customers) that it refers to at V2 §6.10. However, it is unclear how these are relevant to whether a broadband only network will act as a competitive constraint in the WLA market.

4.58 Ofcom's purported justification (V2 §§7.55-7.65) for the exclusion of broadband only networks focuses on the fact that based on the current (June 2019) roll out, broadband only networks are only present in 84 postcode sectors (amounting to 0.1m premises). However, such evidence is almost irrelevant to the question of competition conditions across the market review period given their planned build. If Ofcom applied the same logic to MSNs (of excluding if they are currently small scale) then it would exclude CityFibre. Thus this reason for exclusion is both irrational and inconsistent with other aspects of Ofcom's proposals.

4.59 At V2 §7.63 Ofcom specifically considers the case for Hyperoptic and Gigaclear to be included within its competitive assessment.

4.60 Ofcom notes that Hyperoptic's strategy focusses on MDUs, and that its strategy is "*largely complementary to that of MSNs, serving premises that might otherwise be poorly served. As its coverage is targeted at MDUs, it does not target large areas with the intention to rollout to the majority of premises within an area*". Ofcom then proceeds to rule out Hyperoptic based on these considerations.

4.61 However, it is not clear why even if Hyperoptic's roll-out is complementary to that of MSNs this means that Hyperoptic does not affect competitive conditions – for example, if inclusion of Hyperoptic shifts a postcode sector which contains a number of MDUs from having one rival networks to two rival networks, that still adds to competitive tension in that area. It is also unclear why it matters that it targets MDUs rather than other types of premises, and Ofcom provides no justification for the relevance of this. Furthermore, there are large parts of the country, particularly in major cities, where MDUs are the predominant form of

residential building and so excluding Hyperoptic will mean that the postcode sector is assigned to Area 3 while in practice there is competition.

4.62 With regard to Gigaclear, Ofcom states that:

> *Gigaclear has some existing presence in a limited number of postcode sectors and has plans to extend its footprint. However, we note that a proportion of Gigaclear's network build is based on state aid funding and its footprint is made up of a number of small deployments dispersed over a large geographic area. Gigaclear targets areas where it does not expect to face competition from other networks, including BT. As such, over the period of the review, whilst consumers have some choice in these areas, the degree of competition is not expected to be substantial. Gigaclear's small overall footprint means its pricing is unlikely to have a large effect as a constraint on the pricing of BT's (or other telecoms providers') services. As such, we do not consider that Gigaclear's presence (existing or planned) in a postcode sector would materially alter the competitive conditions we would expect based on MSN presence alone such that we should define a separate geographic market*.

4.63 As with its analysis of Hyperoptic, in this section Ofcom disregards Gigaclear without sufficient reason or evidence to do so. For instance, it is irrelevant for market definition that state aid partially funds some of Gigaclear's network roll-out; this has no impact on the competitive constraints which Gigaclear imposes. Also, to the extent that Gigaclear's developments are dispersed and small scale this will be picked up in the network coverage threshold so if Gigaclear covers fewer than half of premises in a postcode area it will not be taken into account in the geographic market analysis.

4.64 In essence, by disregarding both Gigaclear and Hyperoptic, Ofcom undermines the extent to which its geographic analysis will properly reflect competitive conditions. Ofcom should therefore include Hyperoptic and Gigaclear within its competitor set provided that they will be of sufficient scale for ISPs to purchase from them. We do, though, consider that niche broadband only operators such as B4RN should be disregarded since they are too small to materially change competitive conditions.

4.65 Lastly, we note that the mere fact that a broadband only network does not offer leased lines cannot be a reason for it to be excluded from the competitor set for broadband services.

4.2.3 *Network coverage threshold*

4.66 A key assumption that Ofcom adopts in the geographic market analysis is the coverage threshold that has to be met in order for a network to be counted as being present in a particular postcode sector. Ofcom sets out its views on this as follows (V2 §§7.22-7.24):

> *In the December 2018 Consultation, we presented illustrative results applying a coverage threshold of 65% of premises passed in a postcode sector - largely because this threshold had been used in previous market reviews - and invited stakeholder views. In summary, BT Group and Openreach favoured a lower threshold, Virgin Media saw 65% as broadly acceptable, but the majority of stakeholders who made submissions on this point thought that the threshold should be higher.*
>
> *We recognise that there are arguments for applying a higher or lower threshold. Our proposal is to apply a 50% threshold when considering MSNs. A 50% threshold means that*

we only include postcode sectors where an MSN network passes more than half of premises in that locality. We think that is a reasonable approach to drawing a line for where a network is present. We consider that our proposed approach of applying a slightly lower threshold than we previously consulted on is consistent with our strategy of promoting network investment and competition. Setting a higher threshold would exclude postcode sectors even where more than half of premises would likely see competition. Hence, a higher threshold could result in postcode sectors being considered to have no competing networks despite existing or potential network presence covering the majority of premises.

4.67 That is, having previously consulted on a 65% threshold, and finding that most stakeholders thought this threshold was too low, one stakeholder felt it to be appropriate, and BT Group and its subsidiary Openreach thought it to be too high, Ofcom has proposed to significantly reduce the threshold, from 65% to 50%.

4.68 Notably, in its consultation Ofcom provides no theoretical or evidential justification for this proposal. Rather, part of the justification is entirely circular—that it should be 50% because any number above 50% would mean that an operator covering more than half of properties would not be included. However, it is not an economically based argument; there is nothing special about 50% as a threshold.

4.69 At a meeting held on 27 January 2020 at Ofcom's offices, TalkTalk asked Ofcom to explain why the threshold had been changed from 65% to 50%. Ofcom was unable to provide an answer which cited any evidence at all, whether theoretical or practical. Instead it claimed that 50% was a "more balanced" threshold than 65%. When asked why it was more balanced, Ofcom reiterated that a number above 50% would mean that an operator could pass the majority of premises and not be counted as an operator, which is tautologically true.

4.70 Rather, Ofcom should ground its assumption for the network coverage threshold in the extent of coverage which would be necessary in order for rival networks to act as a competitive constraint on Openreach, and make a small but significant increase in price (of 5-10% from the competitive level) unprofitable. This would properly ground its approach in economic theory, by reflecting the economic rationale for defining different geographic markets– that they have meaningfully different conditions of competition.

4.71 Any such grounding in economic theory is certain to demonstrate that a 50% threshold is meaningfully too low for operators to act as an effective competitive constraint on Openreach. This can be shown either intuitively or by modelling; both methods are set out in this response. As many of the points are the same in the two cases, the intuitive logic is set out first, followed by a simplified modelling approach. A summary of these points is included below with more detail provided in Annex 1.

4.2.3.1 *Modelling the appropriate network coverage threshold*

4.72 To demonstrate that Ofcom could develop a model which would be informative as to the appropriate network coverage threshold, TalkTalk has constructed a model which considers the issue, and provided this as Annex 1 to this submission along with a description of it. This brief summary provides headline details of the content in the Annex.

4.73 In essence, modelling the appropriate network coverage threshold is about assessing how Openreach will maximise its profits in the face of different competitive conditions across an area over which it must set a single price.[47] A well-calibrated network coverage threshold will be one where the degree of competition if the coverage threshold is just met is sufficient to constrain Openreach's behaviour. This reflects the nature of the way in which geographic market definition works– that the conditions of competition must be appreciably homogeneous. Consequently, two areas should be divided into different geographic markets when there is some factor which will lead to different competitive outcomes; where the various factors tend to lead to the same competitive outcome, then the areas should be in the same geographic market

4.74 The question therefore is– how much of a geographic unit needs to be subject to effective competitive constraints before Openreach will amend its behaviour to take account of the competition? This is an issue which is quantifiable through modelling.

4.75 In essence, the simplified model is able to answer this question. The model sets up two sub-areas within a geographic unit– a sub-area subject to strong competitive constraints, and a sub-area with weak or no competitive constraints. The total demand faced by Openreach at any price is the sum of the demand from the constrained and the unconstrained sub-areas.[48] Openreach sets a price to maximise profits across the area as a whole. The demand curve in the constrained area is elastic at competitive prices, while the demand curve in the unconstrained area is inelastic at competitive prices.

4.76 Using conservative estimates of the elasticity of demand– that is, assuming that Openreach faces a more elastic demand curve in the unconstrained sub-area than is likely– it can be demonstrated that an appropriate network coverage threshold is in the range of 60-75%. The precise threshold will depend upon the exact demand curves specified by Ofcom on the basis of the available data. However, it is trivial to show that a 50% threshold is too low– Ofcom has previously said that one competitor is insufficient to act as an effective constraint on Openreach, and a 50% threshold means that even with two competitors both at the threshold, the effectively competitive area and the monopoly area will always be equal. Openreach will not be constrained to price at a broadly competitive level; it will retain its monopoly power.

4.77 Ofcom should therefore conduct its own modelling exercise, based on the data available to it, and determine the appropriate threshold based on economic considerations. This would provide some theoretic and evidential underpinnings for what is, at present, an entirely arbitrary threshold.

[47] If Openreach has the ability to set different prices to various parts of a postcode sector, depending upon the level of competition in that vicinity, the appropriate network coverage threshold is 100%, as even small pockets of monopoly can be exploited by Openreach to charge excessive prices to customers in less competitive areas.

[48] The model could be generalised to have strong constraints, moderate constraints, and weak constraints by having aggregate demand as the sum of three demand curves.

4.2.3.2 *Implications of changing the threshold for Ofcom's proposals*

4.78 An increase in the threshold from Ofcom's proposed 50%, to the 60-75% range suggested by this modelling, will change the proportion of postcodes which Ofcom finds to be subject to competition across the UK, and therefore the allocation of postcode sectors into Areas 2 and 3.[49]

4.79 Ofcom will therefore need to amend Tables 7.2 and 7.3 of its consultation document to reflect the lower proportion of the country which will be deemed to be subject to competition under the raised thresholds, in addition to any other changes required because of different geographic units, and different geographic or product groupings.

4.80 A rise in the threshold will also, in the longer term, lead to lower prices for consumers in Area 2 than under Ofcom's proposals, as Openreach will be subject to effective competitive constraints in a greater proportion of the UK. At present, Ofcom's proposals mean that even if all altnets' build plans were fulfilled in their totality, Openreach would still not be subject to effective competitive constraints in Area 2, as those plans would be insufficient to constrain Openreach to pricing at competitive levels. By raising the threshold to a more economically derived level, which can be shown to lead to an effective constraint when it is met, one of the sources of Openreach's ability to price at above competitive levels can be removed.[50] Lower prices after altnets have completed their roll-out is unambiguously beneficial, increasing benefits to consumers without harming investment.

4.2.4 *Grouping of areas based on degree of competition*

4.81 In this section we discuss Ofcom's approach to how postcode sectors are grouped together to form geographic markets, TalkTalk's view on these, and an alternative approach.

4.82 As set out above at §4.38, it is necessary to group geographic units together into agglomerations that have broadly similar competitive conditions so that SMP can be assessed and appropriate remedies imposed. Ofcom sets out its position regarding this aggregation at V2 §§7.39-7.52.

4.83 Ofcom proposes to define three different geographic markets based on the following criteria:

- Area 3, encompassing 30% of UK premises, where no rival network to Openreach exists or plans to deploy to the majority of premises;
- Area 2, encompassing 70% of UK premises, where either there is a single existing rival network to Openreach (generally Virgin Media) or where one or more rival networks have plans to construct an FTTP network; and,
- Area 1, encompassing 0% of UK premises, where there are "*two established rival networks*" to Openreach.

[49] As will be seen below, it will also have implications for the allocation of premises into Areas 2a, 2b and 2c under TalkTalk's proposed approach to geographic market definition.

[50] The other source is that one competing network to Openreach– which will be the outcome in the majority of Area 2– will be insufficient to constrain Openreach's market power even if rolled out to every premises in a postcode sector.

4.84 We discuss each of these below.

4.2.4.1 *Area 3*

4.85 In theory the criteria for assigning localities to Area 3 should result in a homogeneous market where there is no current or future competition. However, Ofcom's errors in defining the geographic unit, and in deciding the competitor set will result in localities with current or future competition being included in Area 3, particularly from operators such as Gigaclear. The effect of this combined with Ofcom's proposed remedies in Area 3 will mean that potential future altnet FTTP build will be eviscerated.

4.2.4.2 *Area 2*

4.86 The criteria for assigning localities to Area 2 are inappropriate since, even if the errors in geographic unit, competitor set and network coverage threshold were corrected, Area 2 would contain localities with non-homogeneous competitive conditions. Area 2 as defined by Ofcom ranges from York—where three networks (CityFibre, Virgin Media and Openreach) are already actively competing with one another, and indeed where there may be effective competition today– to areas where there is currently an Openreach monopoly but there is the possibility of entry by a competitor in the last few months of the regulatory period.

4.87 Ofcom's justification for why conditions in Area 2 are sufficiently homogeneous is inadequate at best:

> *We acknowledge that, within Area 2, rival build is more certain in some areas than others. Given the uncertainty around investment plans, the only basis for any further segmentation would, as stakeholders indicate, be in relation to splitting between existing rival network presence and plans of different status (e.g. committed versus uncommitted plans).*
>
> *However, market definition is a forward-looking exercise and, for this review, we are looking ahead to the period April 2021 to March 2026. Our assessment is that there are genuine prospects of future rival network rollout in areas where there are plans for rival build. Whilst some of these plans may not be deployed, we have a reasonable expectation that much of this build could be realised, leading to conditions of competition in these areas developing over the period of the review. Absent regulation, there is uncertainty in relation to where and how much rival build we might see and the competitive impact of any build that does occur. This uncertainty could also apply to more immediate and well developed plans for rival network build. We do not, therefore, think that is appropriate to segment Area 2.*

4.88 It is notable that Ofcom does not make a claim that there will actually be homogeneous conditions of competition; it could not do so, because this would clearly be untrue.

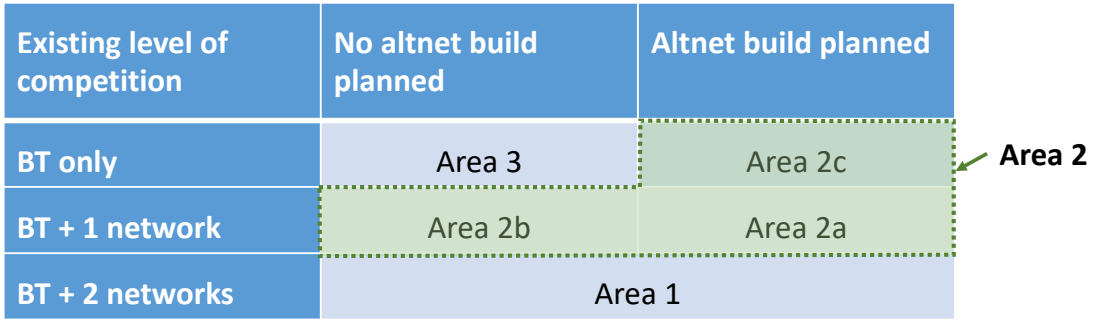
4.89 Ofcom is wrong when it says "*the only basis for any further segmentation [of Area 2] would … be in relation to splitting between existing rival network presence and plans of different status*". There are at least three clearly distinguishable groups of postcodes within what Ofcom currently defines as Area 2:

- 2a: BT plus one existing rival plus the possibility of a second rival by 2026 (16% of Area 2[51]);
- 2b: BT plus one existing rival throughout the control period (53%);
- 2c: BT plus the possibility of a rival by 2026 (31%).

4.90 In particular there is clear difference in competitive impact of a rival that exists today and a rival that is expected in future: a future entrant may not enter the market at all; they might not enter until the end of the period; and it will take time for them to become established and have a competitive impact – see V2 §8.61.

4.91 This is shown in Fig 4.1.

Fig 4.1: Suggested geographic markets



4.92 The level of competition in the longer term will depend not only on existing networks and whether altnets build FTTP, but also on whether Openreach deploys FTTP. This is because over time as demand for higher speeds increases, Openreach's copper/FTTC network will cease to be a competitive constraint on FTTP networks (and eventually DOCSIS networks will also cease to constrain FTTP). For example, in Area 2a (where there is Openreach, Virgin and an altnet planned) if Openreach does not roll-out FTTP its copper/FTTC network will no longer be a material competitive constraint on other networks. Further, as we explain above in section 3.1, overbuild by Openreach FTTP of an altnet FTTP is unlikely and therefore, an outcome where Openreach is no longer a competitive constraint is likely to occur in the medium term. Ofcom has not taken account of this in its analysis. The table below shows the likely levels of competition in each of the three different areas across time assuming that altnets build FTTP.

[51] These are derived from following figures for premises in Area 2: total 21.3m; Virgin Media DOCSIS coverage 14.7m; altnet build 10m.

Table 4.2: Number of competing network operators

Area	Short-term	Medium-term	Longer-term (OR build FTTP)	Longer-term (OR do not build FTTP)
2a	2	3	3	2
2b	2	2	2	2
2c	1	2	2	1

4.93 The lack of homogeneous conditions of competition—or anything close to it—across postcode sectors included in Area 2 is clear from the analysis above: both the current level of competition, and the level which will be seen at the end of the control period, varies from monopoly to triopoly. Therefore setting a single geographic market, as Ofcom proposes, would represent a clear error in both law and economics, with Ofcom ignoring both European guidelines and basic economics. We also note that few of these markets are 'prospectively competitive' which is the label Ofcom gives to Area 2 – it is only Area 2a may be effectively competitive and only if altnet build actually occurs in the next control period, and (in the longer term) if Openreach overbuilds altnet FTTP with its own FTTP network.

4.94 In its consultation Ofcom rejected the idea of splitting up Area 2 (V2 §7.43):

> *some stakeholders argued for a further segmentation of Area 2 to reflect differences in competitive conditions between areas where there is existing rival network coverage versus where rival build is based on plans. We acknowledge that, within Area 2, rival build is more certain in some areas than others. Given the uncertainty around investment plans, the only basis for any further segmentation would, as stakeholders indicate, be in relation to splitting between existing rival network presence and plans of different status (e.g. committed versus uncommitted plans).*

4.95 Ofcom seems to have missed the point here. Any uncertainty in investment plans provides no reason for not splitting Area 2 between areas where there is existing rival network and areas where rival network is planned. In any case, the uncertainty around plans is no reason not to adopt TalkTalk's approach since TalkTalk's approach does not depend on splitting up the planned build depending on status. Rather, it is based on the presence or absence of Virgin Media, a known factor which is not subject to any meaningful uncertainty, and on whether there is planned altnet coverage.

4.96 Ofcom should therefore segment its currently proposed Area 2 into at least the three categories of Area 2a, Area 2b, and Area 2c. These three geographic markets meet the requirement of having broadly homogeneous expected levels of competition.

4.2.4.3 *Area 1*

4.97 At present, although Ofcom is proposing to define an Area 1, it proposes not to identify any geographic areas as falling within Area 1. Its rationale for this proposal is as follows:

> *Area 1 comprises postcode sectors where there are at least two established rival MSNs to BT.*

There are 15 postcode sectors that have already seen investment by two rival MSNs to BT. However, based on a wider assessment of competitive conditions, we do not find any postcode sectors where competition from both networks is well established. We note these responses were based on proposals in our December 2018 Consultation where we proposed to include areas where build could be economic in Area 2.

Our view is that, absent wholesale access regulation, competitive conditions in the postcode sectors would not be sufficiently distinct from those in other postcode sectors in Area 2. In particular, there is clearly potential for material competition, but it remains uncertain how effective this will prove to be, due to: a) the nascent and currently small scale of build, and that this build remains on-going; and b) the overall levels of penetration operators have been able to achieve given their overall coverage.

4.98 The test for assigning postcode sectors to Area 1 is vague and imprecise since Ofcom does not explain what it means by 'established' nor how it is measured or assessed. This is an error since the assignment of postcode sectors to Area 1 (or other Areas) must be objective and measurable in order to be implemented for the 5,600 postcode sectors. Defining markets in such a vague and subjective way adds to regulatory risk and is likely to reduce investment by market participants since it provides Ofcom with scope to act capriciously.

4.99 By way of example, TalkTalk is unclear why the FibreNation/ CityFibre network in York is not characterised as being an established rival already, [✂].

4.100 We suggest that Ofcom sets a clear and measurable test for whether a rival is sufficiently 'established' – we consider that a market share of 20% in the postcode sector would be appropriate.

4.101 There is a second question in geographic market definition for Area 1 regarding whether all postcode sectors meeting the criteria to be assigned to Area 1 should be in a single geographic market or be assigned to different geographic markets in the same way as that the HNR areas are grouped into 11 different geographic markets (see V2 Table 7.5). Assigning to different geographic markets has the benefit that where there is variation in competitive conditions between areas these can be identified and addressed.

4.2.5 *Conclusions on geographic market definition*

4.102 Ofcom's proposals on geographic market definition contain a number of key errors:

- Ofcom should use a more granular geographic unit – we suggest postcodes rather than postcode sectors – in order to ensure more homogeneous competitive conditions and so avoid distortions of competition through inappropriate remedies;
- Ofcom should include larger broadband only networks when assessing competitive conditions;
- The network coverage threshold should be set on the basis of competitive dynamics, rather than on an arbitrary basis. This is likely to lead to a significantly higher threshold, likely between 60% and 75%.

4.103 In addition Ofcom's grouping of postcode sectors into geographic markets contains clear errors, and is out of line with the guidance and legislative framework within which Ofcom operates:

- The criteria for assigning localities to Area 3 are appropriate, though due to the errors set out above the boundaries of Area 3 are incorrect; consequently under Ofcom's approach Area 3 is not homogeneous;
- Area 2 is inappropriately wide containing localities with very different current and prospective competitive conditions. Ofcom should instead define three areas to be separate geographic markets (which we call Area 2a, Area 2b, and Area 2c) depending upon the current level of competition and whether or not altnet FTTP entry is planned.
- The criteria for assigning postcode sectors to Area 1 (BT plus two current established 'rivals') are vague and consequently inappropriate. Ofcom should define a clear and measurable test for what it means by 'established' (e.g. a certain level of market share, length of time present in the market, or some other objective criterion).

4.3 WLA – SMP assessment

4.104 This section provides TalkTalk's comments on the SMP assessment in the WLA markets which it has defined in its proposals. We comment first on Ofcom's principles, then on the generic criteria identified in the EC SMP Guidelines and lastly our comments on Ofcom's proposed SMP findings in each market.

4.3.1 *Approach to assessment*

4.105 Ofcom sets out a number of principles underlying its assessment at V2 §§8.8-8.11. TalkTalk agrees with these, in particular:

- TalkTalk agrees that it is appropriate for Ofcom to adopt a forward-looking assessment;
- TalkTalk agrees that it is appropriate for Ofcom to adopt a modified greenfield approach to regulation, but taking into account that the upstream PIA remedy has been put into place;
- TalkTalk agrees that broadband only networks should be taken into account when determining SMP in WLA markets.

4.3.2 *Criteria for assessing SMP*

4.106 The European Commission's SMP guidelines set out (§58) a number of criteria which need to be considered when determining single firm SMP:

- barriers to entry;
- barriers to expansion;
- absolute and relative size of the undertaking;
- control of infrastructure not easily duplicated;

- technological and commercial advantages or superiority;
- absence of or low countervailing buyer power;
- easy or privileged access to capital markets/ financial resources;
- product/ services diversification (for example, bundled products or services);
- economies of scale;
- economies of scope;
- direct and indirect network effects;
- vertical integration;
- a highly developed distribution and sales network;
- conclusion of long term and sustainable access agreements;
- engagement in contractual relations with other market players that could lead to market foreclosure;
- absence of potential competition.

4.107 This subsection assesses in turn each of these criteria for Openreach. We then briefly discuss joint SMP.

4.3.2.1 *Barriers to entry*

4.108 Ofcom, somewhat surprisingly, considers barriers to entry only obliquely in its consultation at V2 §8.17.

4.109 However, it is clear that barriers to entry are very high– rolling out fixed line telecoms networks involves very substantial sunk costs even to roll out regionally, let alone nationally. For example, even for a town of 20,000 premises sunk costs would be at least £8m[52]. The sunk cost to be an effective competitor on a national level (which is important, as set out below, when economies of scale and scope are taken into account), would be over £10bn. The investments are fixed in place, and are only usable for telecoms services.

4.110 In addition to the very high sunk costs of entry, it takes a considerable length of time to roll out a network. This is due to the need for streetworks, and potentially wayleaves to enter buildings such as multi-dwelling units.

4.111 There is also a need for a skilled engineering force. This is unlikely to be easy for entrants to acquire at a time when the scope to bring in labour from other countries is being reduced due to Brexit, and when incumbents are simultaneously attempting to hire staff to roll out their own networks. Conversely, training up a field force is both expensive and time consuming, adding to barriers to entry.

[52] Using costs of an altnet of £400 per home passed. This excludes the cost of connecting each premises since this cost is not sunk at the time of entry. £400 is the low end of most estimates of potential costs per home passed. [✂].

4.112 Although Ofcom's PIA remedies will somewhat lower barriers to entry, they will not remove them since altnets will still have to rely on self-build for the majority of their network[53] and using PIA requires some additional costs such as breaking into Openreach duct. PIA also provides Openreach with detailed, advance notice of altnet plans, providing it ample time and opportunity to take strategic measures to forestall and undermine entry.

4.113 Ofcom's unevidenced assertions at V2 §8.18 considerably overstate the impact of PIA: TalkTalk does not consider that it will "*significantly*" reduce the time and cost required for network expansion, at least where 'significantly' is taken to mean that it has a sufficient impact to make a difference to an SMP assessment. In order for PIA to make a difference to the assessment of SMP, it would need to lead to entrants having the same incremental costs to build their new FTTP networks as Openreach would have to convert its existing, owned, network to FTTP, creating a genuinely level playing field between Openreach and entrants. This is clearly not the case, for many reasons including:

- altnets using PIA will, based on Ofcom's own estimates, be able to reuse less existing duct/pole than Openreach – 30-50% versus 70-80% (§A17.32). This means that altnets will face higher costs to build new duct/poles than Openreach;
- entrants will face upfront costs of breaking into Openreach duct, costs which Openreach will not have to incur;
- entrants will incur incremental ongoing rental charges to use duct whereas Openreach will incur no such incremental cost (since the cost is effectively sunk);
- altnets will need to engage with Openreach in order to use PIA, causing delays which Openreach will not face in using its own assets.

4.114 In the absence of a level playing field, Openreach will retain SMP due to its more extensive network and lower cost to serve customers. Ofcom has set out no data which demonstrates that PIA will be sufficient to lead to cost equality between Openreach and entrants, and it could not do so given that PIA is not provided free of charge by Openreach. In practice, given the circumstances PIA will therefore make no difference to Ofcom's SMP assessment.

4.115 Ofcom's comment at V2 §8.30 that "*traditionally there have been high barriers to entry and expansion in the WLA markets*" is also rather misleading since it implies that with PIA the high barriers no longer exist. Even with PIA there will remain in the foreseeable future very high barriers to entry when considered from the perspective of competition analysis. These barriers to entry will reinforce Openreach's SMP.

4.116 Barriers to entry particularly raise Openreach's market power in more rural areas where the costs of FTTP network build are high and the minimum efficient scale is above 50% of premises. In these areas, there is a natural monopoly and effectively blockaded entry.

4.3.2.2 *Barriers to expansion*

4.117 As with barriers to entry, barriers to expansion are not explicitly discussed by Ofcom when it is assessing SMP, although they are touched on at V2 §8.17. However, many of the features

[53] Ofcom estimates that an altnet could reuse Openreach duct/pole assets for 30-50% of their network (§A17.32)

are similar to those for barriers to entry: entrants will have large sunk costs of expansion, require a skilled engineering force, and need a significant period of time. Once again, PIA will reduce barriers to expansion, but not to a level where barriers to expansion do not reinforce the market power of incumbents.

4.3.2.3 *Absolute and relative size of the undertaking*

4.118 Openreach is much larger than any of its competitors in the UK fixed line telecoms sector. Its network covers more premises than any other network; and even in competed areas it has the highest market share. Ofcom sets out these data at V2 Table 8.1. Openreach's market share is well beyond the level which creates a rebuttable presumption of dominance in Area 2 and Area 3.

4.119 At a group level BT also has potential advantages over some of its rivals from its large scale, as one of the largest 50 quoted companies in the UK. This is much larger than some entrants such as Gigaclear, and Hyperoptic. These potential advantages largely reflect market liquidity for such a large firm, and the vertical integration of BT Group. However, BT is unlikely to have advantages over some other firms, including Virgin Media (owned by Liberty Global) or CityFibre (owned by Goldman Sachs) which are comparable or larger companies.

4.3.2.4 *Control of infrastructure not easily duplicated*

4.120 This factor is assessed at greater length in Ofcom's consultation that any of the other factors, with analysis encompassing V2 §§8.14-8.19.

4.121 Openreach, and to a lesser extent Virgin Media, control infrastructure which is not easily duplicated, and in Openreach's case almost impossible to duplicate. Openreach's network passes almost every premises in the UK, and is connected via duct or pole to almost all of these, while Virgin Media's duct infrastructure passes around half of premises in the UK.

4.122 The difficulty of competitors replicating this infrastructure can be seen through the progress of Virgin Media's Lightning network extension project. In over three years from 2015/16 to late 2019, Virgin Media rolled out to only 1.8m new premises—6% of the UK, or around 2% per year. At the pace of that project, which is the largest network expansion in recent years, it would take nearly half a century to pass 30m UK premises.

4.123 Moreover, Virgin Media's Lightning project has some significant advantages over a new entrant. Much of Virgin Media's network expansion was infill, benefitting from Virgin Media's existing duct and backhaul networks; and Virgin Media already had an extensive engineering field force and experience to help with rollout. This indicates it is more likely that altnet roll-out would be slower than, rather than quicker than, the pace that Virgin Media has achieved.

4.3.2.5 *Technological or commercial advantages or superiority*

4.124 There is no obvious technological or commercial advantage which Openreach or Virgin Media holds that could not be replicated by a new entrant—FTTP technologies are well understood and used globally. Other technologies developed by Openreach (such as G.fast)

are inferior to FTTP, and seem destined in the fairly short term to be eliminated by competition from the superior technological approach.

4.3.2.6 *Absence of or low countervailing buyer power*

4.125 Buyer power is briefly touched on, at a principle level, at V2 §8.20 of Ofcom's consultation document. However, Ofcom does not appear to reach any conclusions regarding whether, in a practical sense, buyer power will have a competitive impact in wholesale fixed line telecoms markets.

4.126 In Area 3, there is no countervailing buyer power to Openreach from its customers, and in large parts of it there will not be at any point in the future, given Ofcom's conclusion that FTTP rollout in Area 3 requires cross-subsidisation from FTTC and MPF products for FTTP investment to be viable.

4.127 In Area 2, buyer power is limited, and is likely to remain limited throughout the period, increasing Openreach's market power. It is only non-Virgin and non-BT ISPs' customers that are not tied and can be leveraged against Openreach:

- Virgin Media's retail customer base is tied to the Virgin Media network through vertical integration, and so will have no impact on Openreach's decision making, as they are not a current or potential future customer;
- the retail bases of the BT Consumer, Plusnet and EE brands are tied to the Openreach network by vertical integration in BT Group. As such, they cannot exert buyer power on Openreach;

4.128 For non-BT/non-Virgin customers, given that Virgin Media does not wholesale, there can only be countervailing buyer power where an altnet FTTP network (e.g. CityFibre) has been rolled out, meaning that there will only be countervailing buyer power in Area 2a and parts of Area 2c.[54] [✂]:

- [✂].
- [✂].

4.129 Furthermore, even if an operator—whether Sky or any other operator—attempted to exert buyer power in this market, and there was another network available, it is unlikely that they could successfully do so. Buyer power is most effective when volumes can be switched at low cost quickly between providers. In this case, the cost of switching customers is high due to the need to provide connections to the new network; in addition, switching would inevitably be slow.

4.130 This market is not in practice amenable to buyer power.

[54] Some parts of Area 2c will be those in which Virgin Media is proposing network infill under its Project Lightning.

4.3.2.7 *Ease or privileged access to capital markets/ financial resources*

4.131 There is little reason to think that Openreach has a particular advantage over several potential entrants compared to other market participants. For example, CityFibre Holdings is owned by Goldman Sachs, an exceptionally well resourced global investment bank, while Virgin Media is owned by Liberty Global. It is likely to have some moderate advantages over smaller entrants such as Gigaclear and Hyperoptic from better access to liquidity.

4.3.2.8 *Product/ services diversification*

4.132 Once again, this factor is not considered in Ofcom's assessment, but in this instance there is no reason to think that increased service diversification will lead to Openreach holding materially increased market power; other operators such as Virgin Media and CityFibre also offer a diversified range of products, and the slightly more diversified range Openreach holds will not materially change its market power. However, this feature also will not diminish Openreach's market power; Openreach offers at least as wide a range of products as other operators in the market.

4.3.2.9 *Economies of scale*

4.133 BT's economies of scale are implicitly dealt with in a single paragraph of Ofcom's consultation, at V2 §8.31, which discusses economies of scale '*traditionally*' and abstracts from the actual current situation of Openreach.

4.134 TalkTalk considers that Openreach has very significant economies of scale of two different types.

4.135 There are clear **cost economies of scale** in broadband network markets. As Ofcom notes, as the network with the highest market share in the UK, Openreach is able to benefit from a cost structure which is predominantly fixed costs of network construction and operation, with low incremental costs of adding another customer to the network;

4.136 Openreach also enjoys what we refer to as 'revenue economies of scale' (though it could also be categorised as a network externality). These arise since a retail CP will want to connect with only a few networks, as there are significant fixed/sunk costs of systems integration and complexity costs[55] from offering products over multiple networks. Openreach's ubiquity provides it with an advantage over other networks, because every retail CP necessarily has to be connected to its network.[56] [✂]

[55] For example, different networks may have different monthly rental costs; different speed variants; different contention ratios. [✂]

[56] Other than fully vertically integrated CPs such as Virgin Media and Gigaclear.

4.3.2.10 *Economies of scope*

4.137 Ofcom does not appear to explicitly discuss economies of scope anywhere within its consultation document, although it is implicit in its discussion of MSNs relative to broadband only providers.

4.138 TalkTalk considers that there are no economies of scope between different speeds of broadband product offered over different network topologies. ADSL and FTTC broadband services are simply inferior to those offered over FTTP. There are some limited economies of scope between broadband and leased line services, but these are much reduced by other factors such as: different locations of broadband and leased line customers; that much leased line network is built at a later stage, when customer contracts are actually won; different architectures; and, different operating processes (see §7.137 below). Economies of scope are therefore only a minor reinforcing factor for Openreach's dominance, and not one which could, in and of itself, drive an SMP finding.

4.3.2.11 *Direct and indirect network effects*

4.139 Openreach's market power is also supported by a network effect. It is easier for customers to switch between retail broadband providers on the Openreach network (for example, between Sky and EE) than between retail broadband providers on different networks (for example, from Sky to Virgin Media). While switching on network can generally be accomplished without the need for an engineer house visit, switching between networks will require engineering works in home, which will need the customer to stay home and often to take time off work. This means that there are higher switching costs between networks than on a single network. Openreach benefits from these barriers to switching, particularly because it has the largest market share and is the monopoly incumbent in around half the country.

4.3.2.12 *Vertical integration*

4.140 BT Group is fully vertically integrated across the entire telecoms value chain, offering passive access through its ducts and poles; wholesale broadband and leased line services; managed services to other CPs; and is the largest retail provider.

4.141 BT has the highest market share in nearly every sector in which it operates. It has by far the most extensive passive infrastructure in the UK, passing essentially every premises in the UK; it is the largest provider of wholesale local access services through its supply to its downstream divisions, Sky and TalkTalk; it is the largest retail broadband operator through its BT Consumer, Plusnet and EE brands. It is also the largest retail business connectivity provider, and the largest MNO in the UK.

4.142 Vertical integration effectively provides the retail operations with lower marginal costs than non-BT ISPs, strengthening their market power.

4.143 This vertical integration also provides Openreach with a number of advantages in the wholesale local access market:

- its extensive passive infrastructure network means that it can offer service to every home and business in the UK at low incremental costs. This contrasts with an altnet rolling out its network using PIA, which would have to incur incremental costs in the long term. Almost without exception, economic models demonstrate that a firm with lower incremental costs will, other things being equal, obtain a higher market share than rivals with higher incremental costs.
- its leading retail business and consumer market positions provide it with a large captive customer base, lowering its demand risk and so enabling it to negotiate more aggressively with other downstream customers, increasing its profit margins.
- its market leading mobile proposition enables it to leverage market power between fixed and mobile markets using bundling and tying strategies.

4.144 This vertical integration is more comprehensive than any other operator, including Virgin Media, which has a smaller passive access network, smaller wholesale and retail market share, and a small retail-only MVNO mobile operation. As such, vertical integration is another factor which strengthens Openreach's market power in wholesale local access markets.

4.3.2.13 *A highly developed sales and distribution network*

4.145 This factor is not relevant in a wholesale market such as the WLA market since wholesale customers are large and a sales and distribution network is not needed to interact with them.

4.3.2.14 *Conclusion of long term access agreements*

4.146 This factor is also not relevant in vertically integrated market, particularly one in which PIA is available.

4.3.2.15 *Contractual relationships that could lead to market foreclosure*

4.147 Historically, the majority of Openreach's external sales have been undertaken under the provisions of regulation imposed on Openreach by Ofcom. However, in recent years this has changed with the conclusion of the long term volume discounts such as those concluded for FTTC under a contract between Openreach and major CPs. A similar approach is being considered by Openreach for FTTP.

4.148 [✂].[57] [✂].

4.149 [✂].

4.150 [✂].

[57] See, for example, [✂].

4.3.2.16 *Absence of potential competition*

4.151 Whilst there are substantial barriers to entry to the wholesale local access market, there remain a large number of potential competitors in the market. As Ofcom sets out in its consultation[58], a number of firms have either entered the market or announced plans to do so. As such, there is no sense in which there is a lack of potential competition in the wholesale local access market.

4.3.2.17 *Joint SMP*

4.152 In addition to the single firm SMP considerations set out above, the guidelines set out that joint SMP may also be a problem.[59] This is an issue which Ofcom has not considered in its consultation paper at all.

4.153 The picture on joint SMP appears to be mixed. While some features of the market appear particularly conducive to tacit coordination (for example, the high barriers to entry, small number of market participants, and extensive multi-market contact of BT and Virgin Media) some others are less clear (for example, how much knowledge networks would have of each other's pricing in an unregulated market).

4.154 TalkTalk therefore considers Ofcom should also consider, in addition to the finding that Openreach holds unilateral SMP, whether Openreach and Virgin Media could be considered to have joint SMP in the network market at present. If there is such joint dominance, this may point towards a need for some additional remedies on Openreach (and potentially also on Virgin Media).

4.3.3 *Assessment of SMP in each market*

4.155 TalkTalk agrees with Ofcom's overall conclusion that Openreach holds SMP in all fixed line broadband markets in all of the UK except the Hull Area:

4.156 in Area 3, Ofcom correctly notes that Openreach has a market share of approximately 100%, well above the 50% level at which dominance is generally found, along with no prospect of entry to a market characterised by high economies of scale. In the absence of competition, there can be no prospect of countervailing buyer power. Openreach's pricing in Area 3 provides little evidence either way, as it has been constrained by regulation, albeit at a level in excess of the competitive level (due to the HON adjustment). There are no viable competitors of any material scale from outside the market at present,[60] and no indication that during the course of the review period there will be any such constraints from outside the market which would act to constrain Openreach's SMP. It is therefore clear that Openreach holds SMP in Area 3.

4.157 in Area 2, Ofcom notes that Openreach has a market share by volume of approximately 70%, once again well above the 50% level at which dominance is generally found. This implies that

[58] V2 Table 1.2, §1.27 and footnote 19

[59] §65 *et seq.*

[60] TalkTalk considers that Gigaclear are in the market already, rather than outside the market.

if Ofcom were to continue to define a single market Area 2 then Openreach would hold SMP in this market unless there were compelling factors pointing in the opposite direction. In addition, as we describe below, in the majority of Area 2 (e.g. Area 2b and 2c where there will be a monopoly or duopoly up to 2026) Openreach holds SMP and will continue to do so for the whole of the next control period. Given that Openreach holds SMP in parts of Area 2 then it follows that Openreach holds SMP in Area 2 as a whole – this is because it is only by a SMP finding in Area 2 that Ofcom will have the powers to be able to impose regulation to address SMP in parts of Area 2.

4.158 Under Ofcom's proposed market definition, this SMP will be enhanced by the inappropriately low network coverage threshold for an altnet to be counted as present in an area, which means that the constraints imposed by altnets will be lower in some areas than Ofcom's analysis would indicate. Ofcom's analysis will therefore tend to underestimate the extent of Openreach's SMP.

4.159 As we highlight in section 4.2.4.2 above we consider that Area 2 is not sufficiently homogeneous since it includes areas with significantly different conditions of competition. We consider that Ofcom should define three different economic markets in what is currently Area 2, each of which is much more homogeneous (which refer to them to as 2a, 2b and 2c). Below we consider whether Openreach holds SMP in each of these markets. This analysis is not complete since we do not have any data such as market shares for each area.

- In Area 2b there is Openreach and a rival (Virgin in most cases) but no entry is expected. These areas are consequently a duopoly. Ofcom correctly notes (V2 §8.54) that in these market conditions Openreach has enduring SMP as the presence of Virgin Media is inadequate to act as an effective competitive constraint.
- In Area 2c there is only Openreach today but there is a possibility of entry by an altnet FTTP network. Openreach is a monopoly and so will clearly have dominance at the start of the period. Even if entry does occur, as Ofcom points out (V2 §8.61), it will take time for entrants to erode Openreach's market power, particularly if Openreach overbuilds with FTTP; and the market structure following altnet entry will be a duopoly, a market structure which historically has not led to effective competition in telecoms markets. Thus, there is little certainty over Openreach losing dominance and therefore it is appropriate to find that Openreach has SMP in this market review period.
- In Area 2a there is the greatest prospect of Openreach's SMP being undermined. However, again there is little certainty over whether and when entry will occur, or whether entry will be sufficient to act to constraint Openreach's SMP. Ofcom states: "*there is minimal evidence on the impact of a third network on competition*" (V2 §8.74). Consequently, we consider that Openreach holds SMP in Area 2a.

4.160 Ofcom has not assigned any postcode sectors to Area 1 and therefore Ofcom does not need to reach a decision on SMP. However, Ofcom has set out some indicative criteria which it considers that it may use to assess whether Openreach holds SMP in Area 1 (V2 §8.75):

- *Market shares*– Ofcom's position on market shares is rather unclear, stating that although it expects Openreach to have a lower market share in Area 1, there may be some localities within Area 1 where Openreach retains a high market share, and nonetheless Ofcom will assess other factors. Ofcom does not, therefore, say what

importance, if any, it will attach to market shares. In its final determination it should set out its actual position. This need not be definitive in all circumstances but Ofcom could set out some boundary cases. For example, if Openreach's market share falls below 33% of lines in a given geographic market, then it is not possible to make a plausible case that Openreach holds SMP in that geographic market, and should instead consider whether a different firm might hold SMP, or that the market is effectively competitive and no firm holds SMP.

- *Barriers to entry and expansion and prospect of potential competition*–Area 1 is characterised by two 'established' rival networks. However, it does not follow that barriers to entry are low; indeed, due to the high minimum efficient scale in offering broadband networks and three existing networks, they are likely to be higher than in many parts of Area 2. [✂]. As such, barriers to entry are very high, and the prospect of potential competition is remote. Barriers to expansion are likely to depend upon detailed factors. In principle, they could be low, but that will depend upon contracts at both the wholesale and retail levels of the market; and also upon other costs of switching between networks, such as the requirement for in-home engineer visits for every customer switching. It is too early to say how significant these are likely to prove. TalkTalk therefore considers that Ofcom overstates the extent to which barriers to entry and expansion are likely to be reduced, and will require more evidence before reaching conclusions on this, on an area-by-area basis.
- *Countervailing buyer power*– Ofcom states that it expects countervailing buyer power to increase as telecoms providers would be able to move their customer bases onto established rival networks. This is likely to be true while the majority of a CP's customers remain on FTTC/ ADSL, do not have any contracts in place which commit volumes to one network or another, and are not vertically integrated between wholesale and retail levels. However, once the customers are moved to FTTP, they are likely to be resistant to further network moves due to the inconvenience of this; CPs will also be reluctant to switch customers because of the costs of doing so. [✂]. Countervailing buyer power is therefore limited in the short term, and reduce from these already low levels over time.
- *Pricing*– Ofcom asserts that Openreach will be incentivised to respond to the threat of rival networks. However, what Ofcom fails to take into account is that this response need not be pro-competitive or pro-consumer once regulation is relaxed. For example, if a no SMP finding occurred before CPs had had time to migrate away from the Openreach network, Openreach could increase charges on a customer leaving the Openreach network. This would clearly be anti-competitive and detrimental to consumers. Openreach could also engage in price discrimination in Area 1 where some parts of a postcode sector have competition and others do not, reducing competition while leaving average price levels similar to today.

4.161 In addition there are other factors that Ofcom must consider when assessing SMP in Area 1.

- There is uncertainty of the impact of a third network on competitive conditions – Ofcom stated that: "*there is minimal evidence on the impact of a third network on competition*" (V2 §8.74).
- If, absent an SMP finding, Openreach could price discriminate within Area 1 in a manner than is detrimental to competition and consumers, this implies that

Openreach holds SMP. Therefore, Ofcom should assess whether in Area 1 Openreach will have the incentive and ability to price discriminate – for instance by raising prices in locations where competition is weaker.

- Ofcom should also consider whether Openreach is likely to build FTTP itself in these areas and the consequence of that decision on its market power.

4.162 Ofcom's analysis of indicative criteria is superficial, simplistic, and cannot be relied upon.

5 WLA – pricing remedies

5.1 As section 4 set out, Openreach has SMP in WLA markets across the majority of the UK. Openreach's SMP raises concerns about both exclusionary and exploitative behaviour. Exclusionary concerns are most likely when there has been altnet entry in an area; exploitative concerns most likely when there is currently no competition.

5.2 Ofcom's decision on which pricing remedy to adopt is particularly critical to consumers – it can affect the level of FTTP investment by both Openreach and altnets, while also potentially costing consumers hundreds of millions of pounds.

5.3 In this section we first discuss Ofcom's objectives (section 5.1), the underlying principles and approach that should shape the price remedies for WLA products (section 5.2), and an assessment of the various remedy options particularly CPI+0% indexation and adaptive regulation (section 5.3). We then discuss the particular remedies proposed in area 2, area 3 and area 1 in sections 5.4, 5.5 and 5.6 respectively.

5.1 Objectives

5.4 Ofcom lays out that it has two key objectives in the WLA market – promoting FTTP investment and protecting consumers where and when competition is ineffective because an operator holds SMP. For example (v1 §2.9-§2.10 and v4 §1.4):

> *… we propose to further the interests of citizens and consumers by setting our regulation to create appropriate conditions to incentivise both Openreach and other operators to invest in fibre networks, through network competition where viable and appropriate investment incentives where not. The resulting network competition should protect consumers in the long term and allow deregulation in certain areas. However, we also recognise the need to maintain retail competition and to protect consumers' interests including in relation to pricing and quality of service in the period while network competition develops and in areas of the UK where network competition is unlikely to be economically viable.*
>
> *we propose to exercise our discretion in setting these controls in favour of an approach that supports investment in fibre networks through promoting network competition, while protecting consumers from excessive pricing or a loss of retail competition in the short term.*

5.5 TalkTalk broadly agrees that these two objectives are the right ones. However, we have several concerns with Ofcom's approach.

5.6 First, Ofcom's approach (particularly in Area 2) is based on the presumption that altnet FTTP investment will lead to effective competition and that this effective competition will protect consumers' interests. We think that this is unlikely to happen in most cases. As we explain at §3.4 effective competition requires stable three-firm competition[61] between ultrafast

[61] Ofcom accept that competition by two players will not lead to effective competition (V4 §8.54); furthermore, by definition, in a duopoly one firm will have a market share of over 50%, and therefore be presumed to hold SMP in the absence of countervailing evidence.

networks (i.e. between Openreach FTTP, altnet FTTP and Virgin DOCSIS[62]) which in turn requires altnets to overbuild Openreach FTTP networks with their own FTTP where Openreach builds first in a locality (or *vice-versa*). However, overbuild is unlikely to occur due to the underlying market dynamics, which make building sufficient scale on a second FTTP network very challenging. Therefore, the area in which there is potential for effective three-way competition is likely to be small.

5.7 Therefore, although investment in new FTTP networks will deliver benefits to consumers we think it unlikely that effective competition will emerge between networks in many parts of the UK (as suggested in v1 §2.9) and Ofcom's remedies must reflect this.

5.8 Second, though Ofcom has laid out these dual objectives, it appears that it has disregarded and paid lip service (or at best given very little weight to) the need to protect consumers' interests from exploitative behaviour. For example:

- Nowhere in the main text does Ofcom refer to the amount of cost of its proposals (versus the cost-based pricing) or attempt to assess whether the costs are justified by the benefits.[63] This might suggest that the cost does not matter to Ofcom
- at V4 §1.74 Ofcom talks about a singular objective (to promote investment); and its assessment of options appears based on achieving FTTP investment at any cost to consumers without even estimating the harm resulting from its approach or undertaking even a rudimentary cost/ benefit analysis[64].

5.9 The lack of weight given to protecting consumers from excessive pricing is particularly important since, as the analysis below demonstrates, the pricing approach proposed by Ofcom will have an negligible impact on investment. Therefore, Ofcom should focus the design of its regulation on protecting customers (particularly vulnerable ones) and constraining market power.

5.10 Third, later in the document Ofcom seems to have introduced a third objective – that the remedies should be the 'least onerous' in the sense of the administrative burden on Ofcom: for example: "*in reaching our proposals we have considered which pricing options are effective to achieve our objective and which of those effective options is the least onerous*" (V4 §1.7). We agree that where two remedy approaches meet Ofcom's objectives *equally* well then Ofcom should choose the least onerous one. However, Ofcom has not taken this approach. Rather it has rejected pricing options that achieve its objectives better but, it claims, are more onerous. Effectively, Ofcom proposes to sacrifice the interests of consumers to reduce its own workload.

[62] Where there is BT copper, altnet FTTP and Virgin DOCSIS competition is unlikely to be effective since the BT copper network will be relatively unattractive and become more so over time.

[63] The cost is mentioned in a footnote though its estimate of £1.9bn is unexplained (V4 footnote 31).

[64] Though in practice we do not consider that Ofcom's approach will accelerate FTTP investment and so there are no benefits to be traded off against the costs to consumers due to higher prices.

5.2 Underlying principles

5.11 There are three key underlying dynamics that are important in assessing the impact of different pricing remedies and whether they will achieve Ofcom's objectives:

- the extent to which higher wholesale FTTC prices increase altnet FTTP investment;
- the impact of wholesale FTTC prices on Openreach FTTP investment;
- what the benefits are of what Ofcom call 'price continuity', and the need for 'certainty'.

5.12 We discuss these three issues below. We then discuss Ofcom's cost benefit analysis.

5.2.1 *Impact of higher wholesale FTTC prices on altnet investment*

5.13 The most important question in all of Ofcom's remedies proposals is whether higher MPF and FTTC 40/10 prices[65] will result in additional FTTP investment by altnets. Ofcom has asserted that there is a "*significant and positive relationship between higher wholesale prices and network build*" (v4 §1.21).

5.14 Ofcom has made this claim of a "*significant relationship*" without, as far as we can see, any reasoning or evidence in support of the claim:

- the consultation provides no reasoning or evidence to support the claim;
- Ofcom responded to a request to outline the evidence that supports this claim by stating: "*The basis for this view is set out in the preceding paragraphs, notably paragraphs 1.3-1.10 and 1.16-1.24*". However, these paragraphs give no meaningful reason let alone quantitative evidence to support the assertion;
- in a meeting with TalkTalk[66], Ofcom said that this relationship was not '*amenable to modelling*'.

5.15 The lack of evidence is surprising and concerning given that Ofcom's approach of setting prices above cost is entirely premised on this assertion that higher prices will lead to significantly more altnet investment. If this were not true then higher prices would deliver no benefit to consumers through additional investment.

5.16 Ofcom cannot simply assert this relationship – it can and should be tested by Ofcom by developing (and publishing) analysis that explains and quantifies the linkage. Such analysis is feasible and Ofcom already has much of the required data, which will have been acquired for other purposes.

5.17 We discuss below whether Ofcom's claim that there is a significant and positive relationship between FTTC pricing and FTTP investment is likely to be true, and what its magnitude is likely to be.

5.18 When considering whether Ofcom's claim that there is a significant relationship between FTTC pricing and FTTP investment is accurate, it is first important to recognise that timing is

[65] We refer below to just FTTC prices which covers MPF, FTTC and SoGEA prices
[66] Meeting on 27 January 2020

important. Whilst higher FTTC prices have the potential to increase returns on FTTP investment this can only be the case after entry occurs. Pre-entry prices can have no direct impact on altnet investment returns (though there can be indirect impacts, as discussed below at §5.73. This should, in general, militate against raising prices well ahead of entry.

5.19 We consider that there are three reasons as to why the impact of wholesale FTTC pricing on investment is unlikely in practice to be 'significant' as Ofcom asserts.

5.20 First, higher wholesale FTTC prices can only affect FTTP investment returns indirectly. This situation is different to, say, the case of leased lines, where Ofcom is proposing to stimulate investment in leased line networks by raising the regulated price of the product they sell (wholesale leased lines). In this case, Ofcom does not regulate the product FTTP networks provide (wholesale FTTP) but is trying to increase this price by raising the price of a different product. There is thus a two stage transmission mechanism.

- First, higher FTTC wholesale prices will lead to higher FTTC retail prices.
- Second, higher FTTC retail prices will lead to higher FTTP retail prices and so increase FTTP margins.

5.21 These factors will result in the reduction of flow through of FTTC wholesale prices into FTTP wholesale prices, so a £1 increase in wholesale FTTC prices will result in a less than £1 increase in FTTP revenues and margins.

- The pass through of wholesale FTTC prices rises into retail FTTC prices will be partial – TalkTalk estimates, on the basis of work which has been undertaken for us, that in this market pass-through will be about 70%[67].
- Since FTTC 40/10 and FTTP products are not perfect substitutes the 'pass-through' of FTTC retail price increases into FTTP retail prices will also be partial. The extent of the pass-through will depend on consumers' willingness to substitute between the two products, which is likely to vary over time; in particular, the pass-through as Ofcom recognise[68] is likely to reduce over time as consumers increasingly demand higher bandwidth and the constraint of FTTC pricing on FTTP pricing weakens. The level of pass through is also likely to be diminished by Virgin Media's and BT's[69] approach to pricing – for example, in response to higher wholesale FTTC prices Virgin may not raise prices and instead hold its prices constant to gain market share thereby reducing the increase in FTTP retail prices.[70]

[67] Ofcom seems to accept that this level of pass through is reasonable. At volume 4 §1.20b and footnote 6 they say that a majority will be passed through and refer to Sky's estimate of 65% to 85%. Absent Ofcom actually providing an estimate of pass-through itself it appears reasonable to assume that Ofcom considers this estimate sensible.

[68] "*we recognise that the strength of the constraint provided by the 40/10 product may diminish during the control period*". Remedies consultation Mar 2019 at §2.20(c)

[69] The costs of BT's retail ISPs are not affected by an increase wholesale charge since it is an internal transfer (i.e. 'wooden dollars').

[70] In economic terminology, the diversion rates from FTTC to FTTP will be much lower in Virgin Media areas, which lowers the competitive interaction between the two products.

5.22 There are two additional factors that will further reduce the impact of higher wholesale FTTC prices on the margins of an altnet FTTP investment

- where the FTTP altnet is not vertically integrated and wholesales their service, it may be unable to appropriate all of the increase in retail FTTP prices in its returns, with some of the retail FTTP price increase being retained by the retailer as increased profits instead.
- Where an altnet has reached a long term agreement with an ISP then the wholesale FTTP price paid is essentially fixed by contract and not dependent on the wholesale FTTC price. [✂].

5.23 Second, any impact on FTTP retail prices and margins will only be for the market review period 2021-26, which represents a small portion of total revenues across an asset life of 30 years or more, particularly given uptake is lower in the early years. Naturally, the proportion of returns affected will be even lower for FTTP investments made part way through this period, as Ofcom's proposals will have fewer than five years to make an impact. Ofcom cannot legally commit to regulation after 2026, and in any case the market environment may evolve over the period in ways which may necessitate a change in regulation after 2026 – for example, Openreach may lose SMP in some parts of the country, meaning that pricing regulation will fall away; or, if a particular altnet is successful, it may gain SMP and its prices may consequently be directly regulated. Therefore, whilst a higher wholesale FTTC price in 2021-26 could signal that the wholesale FTTC price might be set above competitive levels after 2026, this cannot be relied upon, and will be treated as such by rational investors. Ofcom itself points out that longer term prices will not be set by regulation – for example: "*We expect network competition to put downward pressure on prices in the long term*" (V4 §1.20c).

5.24 Third, FTTP is likely to be subject to some supply-side capacity constraints such as management bandwidth, labour and planning expertise (see §§§ above). Build rates are also restricted in the early stages by the need for investors to assess results from initial investment tranches before committing to and making further investments. In effect there is (short term) inelasticity in FTTP build to levels of FTTP returns. This means that even if a higher wholesale FTTC price resulted in a particular FTTP build project changing from non-viable to viable it may be several years before the additional network was actually built.

5.25 These three effects will mean that an increase in wholesale FTTC prices will likely have a limited impact on FTTP revenues, returns and investment levels.

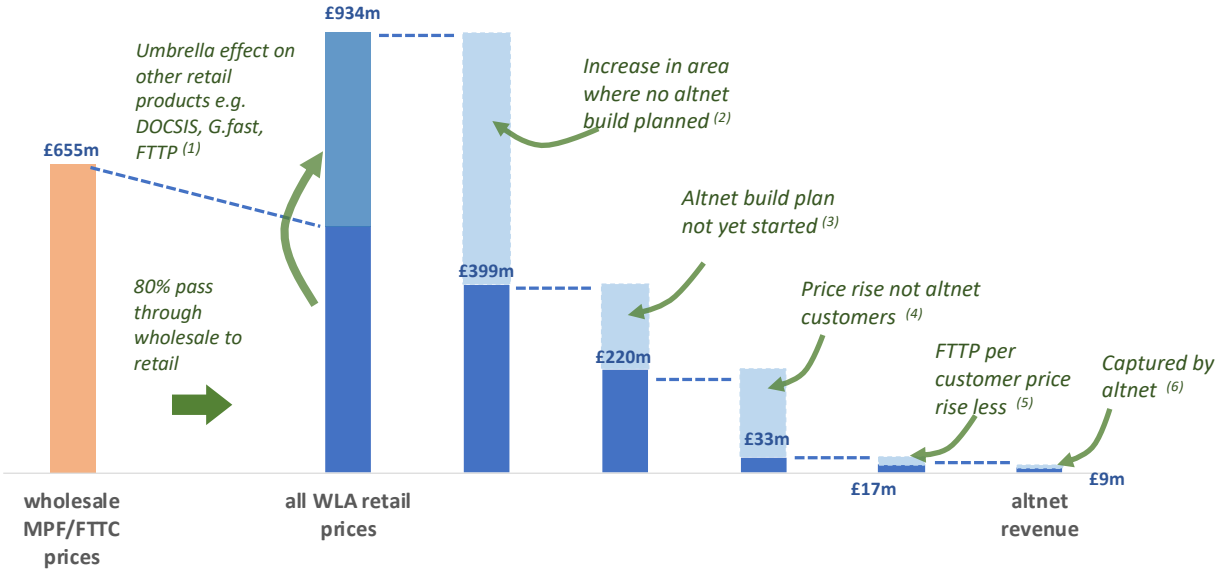
5.26 To understand the likely impact of Ofcom's proposals, we have created an indicative model of the impact of a wholesale FTTC price rise on FTTP revenue and investment returns. As with any model it is a simplification of reality and based on assumptions. However, the result – that raising the wholesale FTTC price has a negligible effect on FTTP investment – is so clear that even if very different (but reasonable) assumptions were used the impact would still be negligible.

5.27 The approach to designing the model and the key assumptions are described in Annex 2 to this submission. In summary, the model is designed and calibrated to match the key inputs and outputs of the Ofcom REO model that is outlined in Ofcom's consultation Annex 17. We

have then made a number of assumptions to be able to quantify the impact of an increase in wholesale MPF/FTTC prices on the revenues and returns of an altnet FTTP investment.

5.28 The modelling shows that the increase in retail WLA prices due to higher wholesale MPF/FTTC is £930m[71] across the period. Yet just £9m (or 1%) of this will flow through to altnets as increased revenue and profit. This is because though prices rise for all customers across Area 2, most of these customers are not even in areas where altnet FTTPs have rolled out, and also because of the dilution effects described above. A 'waterfall chart' of the impacts is shown in Figure 5.1 below.

Fig 5.1: Waterfall chart showing flow of retail price rises (FY22-FY26) into altnet revenue



Notes:

(1) umbrella effect is the effect on the retail prices of non-MPF/FTTC retail products (e.g. DOCSIS, G.fast based) from the increase in MPF/FTTC retail products.

(2) this reflects that price rises in areas where no altnet has plans to build will have no effect on altnet revenue

(3) this reflects that price rises in areas where altnets have plans but have yet to build will have no effect on altnet revenue

(4) this reflects that where price rises are in areas where altnets have built, altnet revenue will only increase for altnet customers and not for customers on other networks in the area

(5) this reflects that the retail price rise (per customer) for FTTP customers will be lower than for MPF/FTTC and other WLA customers since the substitution effect from FTTC to FTTP will be weak

(6) this reflects the altnet will only appropriate some of the FTTP retail price increase, with some remaining as increased retailer margins

[71] The increase in retail prices is an underestimate. Ofcom itself gives a figure for consumer impact of £1.9bn though the assumptions underlying this are not explicit (V4 footnote 31). Also, as described at Annex 2 §2.4 of this submission, these may overestimate the cost-based price, and so underestimate the increase in MPF/ FTTC prices above cost, since Ofcom incorrectly included obsolete asset costs.

5.29 The average impact on the IRR is around 0.03% which is by any measure a small effect and certainly not "*significant*" as Ofcom claims. The same impact on returns would be achieved by a £0.70 reduction in CAPEX (i.e. a reduction from £297 to £296.30) or introducing a 2 month holiday in non-domestic/cumulo rates[72].

5.30 The effect of supply constraints has not been taken into account in this analysis – it will further reduce the impact of higher wholesale prices on investment.

5.31 These figures show that raising wholesale FTTC prices is a highly ineffective and inefficient means of improving returns on altnet FTTP investment since so little of the price increases reaches altnets' cashflows: Ofcom's approach will raise retail prices by about £930m but only £9m will flow to altnets. In other words for every £100 paid in higher prices by consumers, only £1 will go to altnets – the other £99 will be squandered (with most being captured by BT as excess profits).

5.32 Raising wholesale MPF/FTTC prices is so startlingly ineffective in increasing altnets revenues and returns for a number of reasons:

- prices are raised for all customers in all of Area 2 (21.3m) but an altnet only gains from price increases for its customers – in the middle of the review period altnets will have under 1m customers;
- the multiple dilution effects between wholesale FTTC price changes and retail FTTP prices. These dilution effects arise since the product that Ofcom regulates (wholesale MPF/FTTC) is a different product than altnets sell (FTTP);
- [✂]; and,
- the revenue impact only occurs up to 2026

5.33 Further, the impact of non-BT ISP market share erosion (due to the higher wholesale FTTC price) is likely to materially outweigh the potential increase in returns described above. From 2011 when no charge control was imposed on FTTC and prices were set above cost BT gained about 1% market share each year[73]. If in this case, we assume that the effect on market share from prices above cost is a small fraction (a tenth) of the level experienced for FTTC – a 0.1% erosion in market share each year[74] – the impact on the altnet IRR is a reduction of 0.04%, greater than the positive impact of higher FTTP prices.

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[72] [✂].

[73] From report by Frontier Economics for Sky in 2019. "*recent experience from the UK market indicates that the period of pricing flexibility that Ofcom granted to BT/Openreach for FTTC services was associated with BT/Openreach growing its retail market share. Between Q1 2011/12 and Q1 2016/17 BT retail's share of DSL and fibre lines grew from 35% to 41% (excluding the impact of the acquisition by BT of EE in its broadband customer base.*"
https://www.ofcom.org.uk/__data/assets/pdf_file/0025/158551/sky-annex-frontier-economics.pdf

[74] We assume that, for example for an investment in FY2025 there is erosion in share of -0.1% per year after 2022 and after FY2025 the erosion reduces by 20% a year reflecting that once on FTTP non-BT ISPs will win back lost customers. 0.1% is a conservative estimate of the loss. Combined, operators other than Virgin Media and BT Consumer have a little over 40% of the broadband market; these operators serve essentially all of their customers over the Openreach network at present. Ofcom's

5.34 Thus, this analysis implies that imposing CPI+0% indexation rather than cost-based prices will most likely reduce FTTP investment.

5.35 It is telling that Ofcom have asserted that:

- The impact of higher wholesale FTTC prices on FTTP investment through higher FTTP prices is "*significant*"
- the impact of higher wholesale FTTC prices on FTTP investment through reducing non-BT ISP market share is not significant: Ofcom state "*[we do] not expect that [CPI+0% indexation] would result in significant damage*"

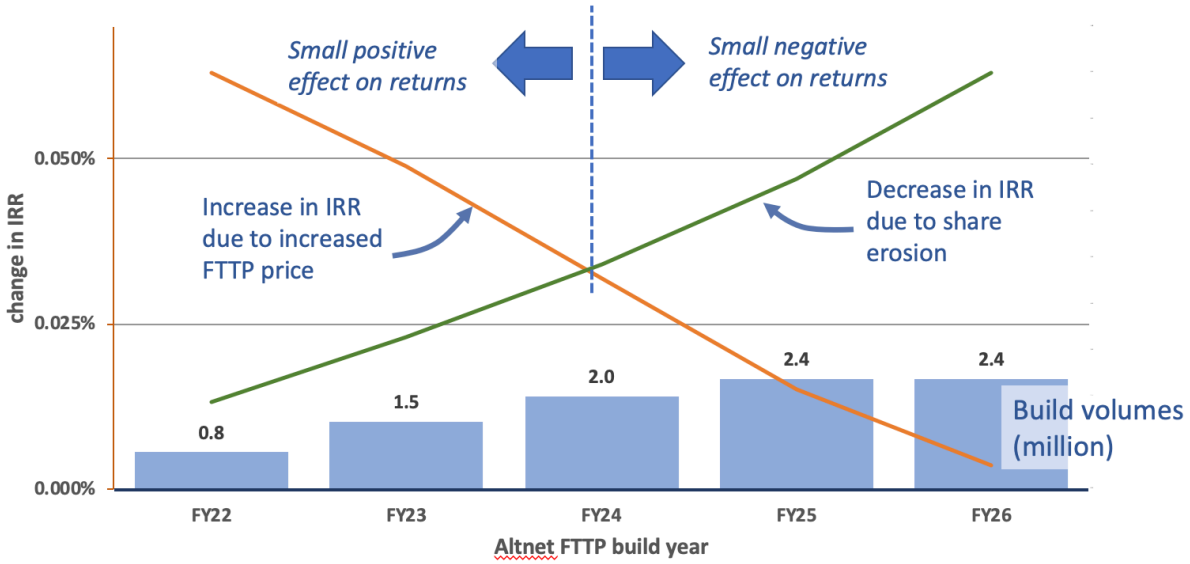
5.36 Both of the assertions have been made without any evidence. The evidence presented above shows the exact opposite – there is likely to be more harm to altnet FTTP returns from non-BT ISP share erosion than the positive impact through higher FTTP prices, albeit that both effects are relatively small.

5.37 The impact of this increase in returns on altnet investment levels will be small. The increase will mean that investment projects (i.e. in particular towns or cities) that previously had a projected return of between 7.86% and 7.89% would become viable to invest in. All other projects would be unaffected: projects that previously had a return of 7.90% or above would have been invested in anyway; and projects with a return of 7.86% and below would not be invested in since the return would remain below the hurdle rate. The impact of supply constraints will mean that these additional projects would not happen immediately.

5.38 It is useful to test how these conclusions change for different investment dates. Fig 5.2 below shows the impact on IRR from the price effect (positive) and from the erosion effect (negative) for different investment start dates. The graph also shows our estimates of the timing of investment across the period.

proposals will increase prices by more than 2% per annum in excess of costs; a loss of 1/400 of demand for a 2% price increase implies an own price elasticity of demand of only 0.125, which is very inelastic demand indeed in a market where other firms (BT and Virgin) have not experienced a cost increase.

Figure 5.2 Impact on return for different investment dates



5.39 This shows that for earlier investments the positive impact from higher FTTP price is greater – this because more of the increase in wholesale FTTC price flows through into higher altnet revenue as FTTC and FTTP are closer substitutes in early years of the period. Also for earlier investments the effect from share erosion declines – this is because there are fewer years when ISPs are exposed to high MPF/FTTC prices – and the positive impact is greater than the negative meaning that the overall net effect of higher wholesale prices on investment is positive. Conversely for later investments the positive effect decreases and the negative effect increases making the overall net effect even more negative.

5.40 This analysis provides evidence that wholesale prices above can have a positive impact on investment (albeit small) if it is focussed on investment happening within a 1-2 year period. This does not mean though that this small positive impact outweighs the other impacts such as higher consumer prices.

5.2.2 *Impact of prices on Openreach investment*

5.41 The impact of higher wholesale FTTC prices on Openreach's FTTP investment incentive is different to that for altnets due to the impact on Openreach's MPF/FTTC margins. This is because the construction of an FTTP network in a locality will cannibalise its MPF/FTTC margins, as the historic network is shut down, or at least sees its demand fall sharply.

5.42 Ofcom has pointed out that where there is a clear threat that an altnet will build FTTP, then the threat of loss of customers if it does not invest in FTTP will be the predominant factor affecting Openreach's FTTP investment behaviour (v4 §1.24). We (and Frontier Economics[75]) agree with this.

[75] See Annex 3 to this submission.

5.43 However, where no such clear threat from altnet exists in the medium term – which will be the case in market 2b and 3 areas at least[76] – then there will be opposing impacts from higher wholesale FTTC prices on the incremental margins derived from FTTP investment:

- retail FTTP prices will be higher thus increasing the incremental profitability of FTTP investment; and,
- wholesale FTTC prices will be higher, increasing FTTC margins and so reducing the incremental profitability of FTTP investment.

5.44 The net impact of these two opposing impacts will be that higher wholesale FTTC prices will reduce the incremental profitability of investing in FTTP and so will tend to reduce FTTP investment incentives. This is because:

- a £1 increase in wholesale FTTC prices will increase FTTP revenues and margins by (much) less than £1 due to the partial pass through (described above) and so margins on FTTP investment will increase by less than £1 per unit; and,
- a £1 increase in wholesale FTTC prices will increase wholesale FTTC revenues and margins by £1 and so decrease profits on an FTTP investment by £1 per unit

5.45 Therefore, all else equal, the net impact of an increase in wholesale FTTC prices will be to decrease the incremental margin from Openreach FTTP investment and so to weaken Openreach's FTTP investment incentives. Based on the assumptions above we can estimate that a £1 increase in wholesale FTTC prices will lead to an increase of about £0.30[77] in FTTP prices. Thus every £1 increase in wholesale FTTC prices will reduce BT's incremental revenues and profits from moving a customer from FTTC to FTTP by £0.70.

5.46 Ofcom appears to agree that this effect exists: "*We agree that higher FTTC prices will increase the relative profitability of remaining on FTTC compared to investing in FTTP, all else equal*." (V4 §1.24)[78]. Notably though, Ofcom did not recognise or ignored this impact in previous reviews[79].

5.47 Ofcom also suggests that the extra profits generated by higher FTTC prices will help fund FTTP investment, and thereby will increase FTTP investment by Openreach (v4 §1.24 and also v4 §1.66):

> *allowing Openreach to earn revenues somewhat above its costs would provide direct support for Openreach's own FTTP rollout (V4 §1.66)*

[76] Given the potential for regulatory change in subsequent market review periods Openreach would place little weight on plans after the end of this control period.

[77] 80% pass through from wholesale FTTC to retail FTTC; and pass through from retail FTTC to retail FTTP of 50% at the start of the period, declining to 30% at the end of the period - see Annex 2 §2.5 to this submission

[78] Also see Clarification question 4: Openreach investment incentive (V4 1.56-1.57). Ofcom has assumed that in areas where there is altnet threat that this is the dominant factor affecting OR investment incentive. What is Ofcom's view on the impact of higher copper wholesale prices in areas where there is no or weak altnet FTTP threat? Answer: See paragraph 1.24, which states "*We agree that higher FTTC prices will increase the relative profitability of remaining on FTTC compared to investing in FTTP, all else equal*."

[79] There is no mention of this effect in either WLA18 or in the 2019 Remedies Consultation.

In paragraph 1.66, we are noting that higher profits on copper products could be used to by Openreach to fund its own FTTP rollout[80]

5.48 The argument that Ofcom is making here is an unusual one, which finds little support in economic literature. Openreach's FTTP investment incentives are based on the incremental returns from FTTP investment. If Openreach is allowed a windfall through higher wholesale FTTC prices this will have no effect on its FTTP investment incentive (except through the mechanism described above, which reduces investment). The only reasons that higher FTTC prices might "support" FTTP investment would be if either BT faced capital constraints; or if Ofcom believed that the cost of internal financial to BT was meaningfully lower than the cost of external financing (which would in turn require that the capital asset pricing model is wrong) – Ofcom has made no claim that either of these are the case[81]. Therefore, the mere existence of spare cash will not increase Openreach's incentive to invest in FTTP.

5.49 Therefore, in assessing different pricing options Ofcom must reflect that where the threat of altnet entry is limited, higher wholesale FTTC prices will reduce Openreach's FTTP investment incentive.

5.2.3 *'Price continuity' and certainty*

5.50 Ofcom has described its proposed price approach of indexing existing MPF/FTTC prices at CPI+0% as 'price continuity'. It goes on to claim that this approach is in line with existing regulation and also that it has already resulted in additional FTTP investment (V4 §1.8, §1.10, §1.76):

Our approach in recent years has been to set prices that are intended to encourage investment in competing networks, rather than solely by reference to Openreach's costs. By encouraging competitive network build, this approach also sought to encourage Openreach to invest in high speed networks. This approach to pricing was trailed in the DCR (2015), with implementation taking shape in our WLA (2018) and BCMR (2019) decisions.

Evidence suggests that our approach to price regulation is having the desired effect, in that we are seeing competitive network build develop

Our preferred option is therefore to maintain pricing continuity in the WLA market in Area 2. We consider this option would be effective to achieve our objective of supporting network competition through promoting network competition, while protecting consumers against excessive pricing and maintaining retail competition in the short term. We also consider it to be the least onerous effective option. In particular, this option provides appropriate incentives to market players (including regulatory certainty) but leaves competition, rather than regulation, to drive outcomes. As discussed above, the evidence suggests this approach is working.

5.51 Ofcom goes on to assert that imposing cost-based prices in WFTMR would reverse its existing approach (v4 §1.92, §1.41):

[80] This was included in the clarifications Ofcom provided.

[81] There is no evidence that Openreach is capital constrained at present, and Ofcom has not sought to present any such evidence, which would in any case conflict with BT's payment of a dividend exceeding £1bn per annum in cash terms.

If we were to now tighten price regulation, and risk undermining that investment, we would see this as compromising the interests of consumers over the longer term

… a return to cost-based price caps would reduce the incentive to invest in competing networks, signal that we are moving away from our approach of setting prices to support investment, and risk undermining current and planned investment.

5.52 Ofcom's claims are incorrect.

5.53 First, wholesale MPF and FTTC 40/10 price caps are currently cost-based and so imposing cost-based prices in this review would not be "*a return to cost-based price caps*" (V4 §1.41). In fact, in WLA18 a cost-based price cap was imposed on FTTC40/10 for the first time and MPF price caps continued to be cost based following the well-established approach first imposed over 15 years ago. Therefore, imposing a cost-based price cap on MPF and FTTC40/10 from 2021 (either throughout the period or post-entry under adaptive regulation) would not "*tighten price regulation*" or be "*a return to cost-based prices*" – rather it would continue the current approach.

5.54 Thus it is misleading for Ofcom to describe its approach as 'price continuity' – rather it represents a stark departure from the existing and well-established approach to price regulation. Accordingly we do not refer to Ofcom's proposed price cap as 'price continuity' – instead we call it CPI+0% indexation, as Ofcom should. Ofcom is wrong to attribute any advantage from its CPI+0% indexation proposal because it 'continues' the existing pricing approach. Rather, the exact opposite is true: since CPI+0% indexation is a departure from the current well-established approach which lacks supporting evidence it reduces certainty for investors and so is a disadvantage.

5.55 Secondly, Ofcom has not provided any evidence to support its assertion that there is a link between its idea to set prices above cost and increased FTTP investment levels. Firstly, investors will know that even if Ofcom had suggested it might set higher prices that this could only be implemented following a consultation – thus, investors could not rely on Ofcom's pronouncements. Furthermore, there are many reasons as to why there has been increased activity by altnets and Openreach such as evidence from other countries; increasing consumer demand for higher speed products; reducing build costs; greater maturity and certainty over network technology and design; DPA improvements; and, growing evidence of costs and demand from initial investments. To attribute the increase in activity to Ofcom's initial idea[82], even before they had been specified, published or consulted on, is not correct. Accordingly, it is wrong to assume Ofcom's CPI+0% indexation approach has already resulted in increased investment and so is likely to drive increased future investment.

5.56 What is ultimately important to investors is regulatory predictability which provides greater confidence and certainty about future regulation. Confidence and certainty for investors is

[82] In respect of leased line networks Ofcom did depart from cost-based prices in BCMR19 though, leased lines are a small portion of all revenues, that decision is subject to appeal and there is no evidence presented of additional leased line network investment resulting from that decision. In any case, Ofcom states that there has been little leased line network build over the last two years (vol 2 §7.70) so it cannot claim that its BCMR pricing approach has led to additional leased line network investment.

fostered by maintaining consistent policies and principles over time and only changing them after evidence-based consultation. If Ofcom makes a radical change in regulatory approach, without supporting evidence or proper consultation[83], investors will rightly question how they can have certainty that Ofcom will not perform another U-turn at the next market review. This uncertainty risks reducing FTTP investment by all firms.

5.57 This lack of continuity and predictability in Ofcom's proposals is particularly obvious when one considers Area 2b (where Openreach and Virgin are present today but no altnet investment is expected) which is the majority of Area 2. Here MPF prices have been cost-based for more than 15 years and FTTC 40/10 prices have been on a glidepath to costs since June 2018. In these areas no change in competitive conditions is expected up to 2026 and there can be no benefit from higher prices stimulating altnet FTTP investment since none is expected. So despite there being no change in competitive conditions or reason to depart from cost-based prices Ofcom is proposing a drastic change in pricing approach. It is wrong to suggest that this represents '*price continuity*' and provides certainty.

5.58 Lastly, we note that Ofcom may try to justify its proposals on the basis that it first trailed CPI+0% indexation in March 2019[84] and that it is advantageous to maintain consistency with that approach since it is now expected. If that is Ofcom's argument then it would make a mockery of the consultation process since Ofcom could propose (or 'trail') a new regulatory approach, say that stakeholders are expecting it and then impose it on the basis that they need to maintain consistency with what was expected. The argument from Ofcom would be entirely circular, with an Ofcom proposal creating an expectation which justified that proposal. This would undermine the consultation process whereby proposals are published at a formative stage when they can be changed. Therefore, it would be unlawful for Ofcom to adopt such an approach or justify its proposals in this way.

5.2.4 *Comparison of costs to benefits*

5.59 Comparing the costs of a policy to its benefits is a critical tool in understanding the impact of different approaches and selecting the most effective form of regulation. Ofcom's own guidelines state that it will undertake impact assessments that, *inter alia*:

> *"identify and, where possible, quantify the costs and benefits flowing from the impacts which each option would have"*[85]

5.60 Ofcom claims that is confident that the benefits of its proposals will more than outweigh their costs, citing a calculation comparing the benefits to the costs:

> *we consider the long-term benefits of increased network competition supported by our proposals will outweigh any higher prices paid by consumers in the short term. Even a simple illustrative calculation suggests it is likely that consumers will benefit* (V4 §1.93)

[83] For the avoidance of doubt, TalkTalk does not consider that the current consultation meets the threshold of being a proper consultation, given the large gaps in evidence and significant reliance on implicit assumptions to support Ofcom's proposals.

[84] Ofcom, *Initial proposals – Approach to remedies consultation,* March 2019.

[85] Ofcom, *Better Policy Making, Ofcom's approach to Impact Assessment*, at §2.1.

5.61 Ofcom's calculation is based on the following impacts from the CPI+0% indexation approach:

- Benefit of altnet investment: £1.50 per month (in perpetuity) for 5m homes passed by altnets
- Cost in higher prices: £1.50 per month (for period 2021-26) for 21m homes in Area 2

5.62 A proper cost benefit analysis should be based on comparing only the incremental costs and benefits of a policy versus a counterfactual. Impacts that would occur irrespective of the policy adopted should not be included in this analysis. The relevant policy in this case is setting wholesale MPF/FTTC prices in the next control period based on CPI+0% indexation against a counterfactual of status quo regulation: cost-based prices. Therefore, the costs and benefits that Ofcom should calculate should be based on the additional FTTP investment due to CPI+0% indexation rather than cost-based prices.

5.63 However, Ofcom has not conducted a proper cost benefit analysis. Ofcom has assumed that the 'benefit' is 5m homes passed. Openreach do not explain whether this is the total expected build or the incremental build. Either way, this number is wrong. If it is the total build then it is wrong since the incremental number should be used. If it is the incremental impact of its policy then it is implausible that the policy will cause 5m altnet homes passed (or half of the forecast altnet build) given the negligible impact of wholesale FTTC prices on altnet IRR (see §5.29 above).

5.3 Comparison of adaptive regulation versus CPI+0 indexation

5.64 Ofcom has a number of options for future pricing remedies including CPI+0% indexation (combined with prohibiting geographic discounts), continuation of cost-based prices; and adaptive regulation. The decision on which pricing approach to adopt is critical to consumers. A responsible and open-minded regulator should ensure that the assessment of different options is objective, even-handed and, where possible, informed by evidence to ensure that consumers' interests are best served. However, in this case despite adequate resources Ofcom's assessment of different options is neither objective nor evidence based.

5.65 In this section we compare two pricing options: Ofcom's CPI+0% indexation approach (combined with a prohibition of geographic discounts) and the adaptive regulation approach which TalkTalk has developed. Under the adaptive regulation approach, prior to altnet FTTP build, MPF/FTTC prices would be based on Openreach's costs (i.e. cost-based) and after entry they would be based on the REO costs of an altnet FTTP network. In our remedies consultation response in July 2019 we explained in more detail how this could be designed and would work[86]. The key elements are described in the table below.

Table 5.3: Key elements of adaptive regulation

• Prior to altnet coverage reaching threshold trigger wholesale MPF/FTTC prices cap applies based on Openreach cost.

[86] TalkTalk submission to Approach to remedies consultation June 2019, at Section 6

- Once trigger reached wholesale MPF/FTTC price floor set based on REO cost (i.e. cost of altnet FTTP less FTTP price premium)
- We proposed a threshold trigger 70% of postcode sector
- Price cap (pre-trigger) and price floor (post-trigger) could vary by area reflecting different costs
- Whether postcode sector has met trigger can be assessed by Ofcom quarterly or half-yearly based on coverage data Ofcom anyway collects

5.66 Thus, the key difference between adaptive regulation and the CPI+0% indexation approach is that under adaptive regulation approach prices before investment are based on the cost to Openreach of delivering a service (rather than above cost). Post-investment prices are set above cost in both cases[87] but under adaptive regulation a floor is used rather than a cap.

5.67 With this submission we have provided an independent report by Frontier Economics comparing the impacts on FTTP investment and consumer interests of adaptive regulation and CPI+0% indexation. Below we summarise that report and also add some additional factors that Frontier Economics were unable to take into account. We firstly discuss Ofcom's assessment of adaptive regulation.

5.3.1 *Ofcom's assessment of adaptive regulation*

5.68 Ofcom's assessment of the impact of these differences is ultimately based on a simple construct (v4 §1.47-§1.61, §1.20, §1.74, §1.130):

- altnet FTTP investment will be greater under CPI+0% indexation (combined with a geographic discount prohibition) since:
  - adaptative regulation does not create the 'jeopardy' to force ISPs into making agreements with altnet FTTP builders (v4 §1.52)
  - CPI+0% is simpler and FTTP investors will not understand or rely on prices increasing post-investment since investors are "*remarkably unsophisticated*"
  - Ofcom does "*not expect that [CPI+0% indexation] would result in significant damage to [retail CPs'] competitive position such that they would no longer be able to offer a large customer base to new network builders*" (v4 §1.20e)
- increased altnet FTTP investment will lead to greater Openreach FTTP investment;
- Openreach investment will also be increased since the extra profits on FTTC will be diverted into funding FTTP;
- the greater FTTP investment will deliver more network competition in the long term which will outweigh, in terms of consumer benefits, the higher prices and weaker retail and wholesale competition in the short/medium term;
- in addition, Ofcom has claimed a number of other disadvantages from adaptive regulation versus CPI+0% indexation:

[87] For the sake of this comparison we assume that, post-investment, the level of the cap (under CPI+0% indexation) and level of the floor (under adaptive regulation) are the same.

- the floor may be set too high resulting in excessive prices (V4 §1.59);
- adaptive regulation is complex (V4 §1.130) and more onerous to implement;
- a CPI+0% price cap is consistent with current regulation;
- there are "*potential legal issues with the adaptive regulation*" (V4 §1.74).

5.69 Ofcom's assessment of CPI+0% indexation versus adaptive regulation is deeply flawed – for instance:

- It is partial and biased;
- It is based on unsubstantiated assertions rather than evidence;
- it omits to consider important areas where adaptive regulation clearly performs better than CPI+0% indexation.

5.70 It seems that Ofcom has focussed its efforts on trying to find weaknesses with alternatives and highlighting strengths of its own proposal rather than on objectively assessing how each option performs on each criterion to identify the one that is best for consumers.

5.71 We discuss the key problems with Ofcom's analysis below.

5.3.1.1 *'Efficiency' of wholesale price increase*

5.72 One factor that Ofcom does not consider in its assessment is the efficiency of the wholesale price increase in increasing returns. As we highlight above §5.29, the vast majority of the increase in wholesale and retail prices does not flow through into altnet FTTP revenues, but instead mostly increases the profits of BT Group. This is a highly inefficient mechanism – 99% of the additional charges consumers pay do not contribute to its purpose. Under adaptive regulation the wholesale and retail prices only increase when and where altnets invest but the amount that flows through to altnet profits is the same. We estimate that the increase in retail prices is about £270m (versus £930m under CPI+0% indexation) improving the efficiency by about four times (as well as avoiding market share erosion). The reason for the improvement in efficiency is that under CPI+0% indexation prices increase in areas where either no build is planned or in areas where it is planned but build has not started; adaptive avoids this wasted increases.

5.3.1.2 *Jeopardy*

5.73 Ofcom claims that adaptive regulation does not create jeopardy for CPs versus its CPI+0% indexation approach – effectively that ISPs will not have the incentive to commit to wholesale arrangements with altnets if prices are initially cost-based and only increase post-entry. It says (v4 §1.52):

> *It has been suggested that requiring Openreach to increase its prices to a minimum (floor) level after rival rollout has occurred will provide the incentive for competitive network investment. However, it is not obvious to us that this will change the incentives on the telecoms providers that are currently reliant on Openreach's wholesale services. This is because if building a network or purchasing wholesale services from an alternative*

competitive network is better than purchasing cost-based services from Openreach, then these providers should pursue these options regardless of the post build prices.

5.74 This statement which focuses on ISPs' incentives was unclear to us and we asked Ofcom to clarify its reasoning. It replied as follows:

V4, 1.52 considers the incentives on telecoms providers that are currently reliant on Openreach's wholesale services, e.g. Sky and TalkTalk. The suggestion being tested is that these providers will be incentivised to build a network themselves, or to do a deal with an alternative provider who will build a network, if they know that Openreach's prices will increase after a competitive network has been built.

The conclusion is that getting Openreach to increases its prices post competitive build does not obviously change the incentives on these providers.

By way of example, a competitive network will either be able to match Openreach's prices profitably or it will not be able to. If the competitive network cannot match Openreach's prices, we do not believe that these providers will pursue building a competitive network. Having higher post-build Openreach prices seems irrelevant, as the competitive network will not get built and thus these higher prices will never materialise. We therefore consider the alternative case, where the competitive network is able to match or undercut the Openreach price.

If the competitive network can match or undercut Openreach's price then it would be better for these providers to build a competitive network than buy from Openreach. However, this is true regardless of Openreach's post-build prices.

5.75 This is somewhat new reasoning since it focuses on the incentives on the altnet rather than CPs. However, the reasoning in this further response is also unclear. Ofcom seems to be saying that if pre-entry Openreach price is so low that it is not profitable for an altnet to build (i.e. "*cannot match Openreach's prices*") then the altnet will not build. This seems to disregard that the altnet will know that if the altnet builds an FTTP network the post-price will come into effect and so will make their investment decision on the post-entry price. It is not clear why Ofcom think that the altnet would ignore the post-entry price. We think that altnets (and their investors) are able to understand the concept that prices can alter depending on the altnet build. Therefore, adaptive regulation does not weaken the incentives for altnets to build.

5.76 This is amplified by the pre-existence of contracts with volume commitments and fixed prices between an altnet and one or more CPs. In this case, demand from CPs with such a contract in place will not change depending upon Openreach's wholesale FTTC pricing.

5.77 Another aspect that is important that Ofcom has touched on in the consultation document is the incentives facing the CPs and how they vary depending on the status and likelihood of altnet build. There are three potential scenarios for a CP considering a deal:

- the altnet intends to build irrespective of deal with CP – in this case the incentives to enter a deal are the same between adaptive regulation and CPI+0% indexation;
- altnet will *not* build irrespective of deal with CP – in this case the incentives are the same between adaptive regulation and CPI+0% indexation, as there will never be any effect from entering into an agreement;

- the altnet will only build if it secures a deal with the CP. In this case, there could be potential differences in CPs' incentives between adaptive regulation and CPI+0% indexation since a CP could essentially 'block' the altnet building by not committing to a deal Openreach prices would remain lower. However, in practice a CP is unlikely to behave in this way. By committing they will be able to:
  - gain a competitive advantage over BT and Virgin Media (who would not use the altnet FTTP network);
  - gain a competitive advantage over any other ISPs which have not committed to the altnet; and,
  - avoid a competitive disadvantage over any other ISPs which have committed to the altnet.

  It is important to recognise that there is [✂].

5.78 That high prices pre-entry (or indeed post-entry) are not required for ISPs to commit has been borne out in practice. [✂][88] [✂]. Sky now faces the prospect of altnet FTTP roll-out going ahead irrespective of whether it signs up. This provides a strong incentive for Sky to take services from CityFibre under an adaptive regulation structure, as if it does not do so it will face higher FTTC prices and be competitively disadvantaged on both cost and quality versus other ISPs.

5.3.1.3 *Investor comprehensibility*

5.79 When TalkTalk met Ofcom, Ofcom explained that in fact their primary concern in relation to 'complexity' was not related to administrative burden but rather that investors would not understand that under adaptive regulation prices will increase once investment occurs since investors are "*remarkably unsophisticated*". TalkTalk does not agree with Ofcom's suggestion that investors are "*remarkably unsophisticated*" and so will not be able to understand how adaptive regulation would work. The most important altnet investor is Goldman Sachs, as the owner of CityFibre; it is inconceivable to us that Goldman's ability to understand pricing structures could ever reasonably be described as unsophisticated.

5.80 Further, it is notable that Ofcom's proposed regulatory approach in area 3 is more complex and more difficult to understand and predict than adaptive regulation, since it involves a change to a novel RAB model which is untested in the telecoms industry, in a market which differs radically from others in which RAB models have previously been used and which depends on unpredictable Openreach investment decisions.

5.3.1.4 *Impact on non-BT ISP market share*

5.81 Ofcom asserts that higher FTTC wholesale prices will not "*significantly damage*" non-BT ISPs market shares and thus will not undermine the returns of altnet FTTP investments that rely on non-BT ISP share to drive their uptake. Ofcom accepts that wholesale deals with non-BT ISPs are key to the success of altnets, for example: "*the most important driver of competitive network investment will come from the choices that telecoms providers make about their*

[88] [✂].

future purchases of wholesale services". The erosion of market share will be significant since in Area 2 on average during this market review period non-BT ISPs will bear higher FTTC prices, but will not have access to altnet FTTP products, in about 80% of area 2[89].

5.82 As we described above, modelling shows that the erosion of non-BT market share as a result of higher wholesale FTTC prices will reduce the IRR by 0.04%. This is higher than the increase in returns through higher FTTP prices.

5.3.1.5 *Impact on Openreach FTTP investment incentives*

5.83 In considering Openreach's investment incentives, Ofcom ignores that the majority of Area 2 (area 2b) will see no altnet FTTP build in the next control period and the altnet threat will be limited. In Area 2, where there is no threat from altnets, the impact of higher wholesale prices will be to reduce Openreach's FTTP investment incentives. Openreach's FTTP investment incentives will therefore be stronger under adaptive regulation. Oddly Ofcom accepts this dynamic (V4 §1.24) in the abstract but has seemed to disregard it when assessing adaptive regulation.

5.84 As we explain above §5.48 there is no economic rationale for the concept that if Openreach makes more profit on FTTC products it will divert this into funding FTTP investments. The mere existence of spare cash will not increase Openreach's incentive to invest in FTTP.

5.3.1.6 *Level of floor set too high*

5.85 Ofcom claims that the FTTC price floor may be set too high: "*the imposition of a price floor could also result in consumer detriment in the longer run if it was set too high. There is a risk that artificially inflating prices could result in consumer detriment due to high prices, as well as discourage FTTP take-up*" (V4 §1.59)[90].

5.86 This reveals clear bias in Ofcom's approach and shows that it is not open-minded since Ofcom did not assess CPI+0% indexation against this same criterion. If Ofcom were to assess CPI+0% indexation against this criterion it would show that:

- CPI+0% indexation carries a greater risk of the level being set too high since the price cap level (CPI+0%) is essentially plucked from thin air without any underlying evidence, whereas under adaptive regulation the price floor level would be based on a REO model for the price level required to allow altnet FTTP investment;
- Any detriment from "*artificially inflating prices"* is far greater for CPI+0% indexation since the higher prices are imposed on far more customers than adaptive regulation.

[89] Area 2 is 21m premises. If 10m are built with a higher build rate towards the end of the period on average across the period about 4m homes will have altnet FTTP and 17m (or 81% of Area 2) will not have altnet FTTP.

[90] Ofcom clarified (question 5) that this comment related to the FTTC floor being set too high rather than Openreach setting prices above the FTTC floor.

5.87 Ofcom's bias here is all the more disappointing since TalkTalk wrote to Ofcom in October 2019[91] about the need to avoid exactly this form of bias by assessing each regulatory option against the same criteria.

5.3.1.7 *Lack of continuity with existing regulation*

5.88 As we have explained above in section 5.2.3 it is factually incorrect for Ofcom to claim that CPI+0% indexation represents a continuation of existing regulation (which is based on cost-based prices). Rather exactly the opposite is true – CPI+0 indexation is a stark departure from the existing approach to regulation. Whilst adaptive regulation also represents a change from existing regulation it is a smaller change since there is only a move from cost-based regulation for some customers and where the competitive conditions justify change.

5.3.1.8 *Adaptive regulation claimed to be 'onerous'*

5.89 A reason for Ofcom rejecting adaptive regulation is that "*it would not be the least onerous means of*" (V4 §1.74) meeting its objectives and that "*it would be complex to implement and would create administrative burden*" (V4 §1.130). As we describe above at §5.10 we consider that administrative burden is a secondary consideration to the key objectives of encouraging investment and protecting consumers from excessive prices and weakened competition.

5.90 In any case, as we describe below, the burden is limited – indeed when TalkTalk met Ofcom in January 2020 it said that it was not concerned about adaptive regulation being too complex or difficult to implement. This reflects that designing and implementing adaptive regulation is well within Ofcom's competency and capacity, and that it has already completed much of the necessary analysis and has the required data available:

- In terms of design and implementation adaptive regulation requires the derivation of a (cost-based) price cap and a (REO-based) price floor and the design of a trigger mechanism for when there is a shift from one to the other;
- Ofcom has said that cost-based prices were "*straightforward to implement*" (v4 §1.46). Ofcom already has a model of Openreach's MPF/FTTC costs which is it is proposing to use to set cost based prices in area 3 and it can use this to derive different cost based prices in different areas;
- Ofcom also has a model of the REO FTTP costs that would be needed to set the post-entry price floor;[92]
- It is straightforward to develop and implement a suitable trigger for when prices switch from a cost-based price cap to REO based price floor. TalkTalk provided a

[91] Email Andrew Heaney to Markham Sivak 23 October 2019 which included: "*To be able to reliably identify the best option it is essential that the options are objectively assessed side-by-side against the same criteria. It would not be acceptable for Ofcom merely to reject a particular option of the basis of a certain weakness without assessing which option performs better in the round - such an approach would be partial and prejudiced and ultimately may not identify the best option since it may be that the rejected option performs better on other criteria*"

[92] Whilst costs are to some extent unpredictable this issue is as much a concern for setting a suitable price index (e.g. CPI+0% indexation) as for setting a price floor (under adaptive regulation).

description of how this could be done in our previous submission[93]. Furthermore, Ofcom already collects the relevant data on FTTP coverage that would be needed to determine the areas in which revised regulation would be triggered.

- Furthermore, as we pointed out in our previous submission[94], Ofcom has the legal ability to vary price levels part way through the review period in response to particular factors. Indeed what Ofcom is proposing in area 3[95] demonstrates that Ofcom is able to adjust price levels part way through a review period in response to an external factor (in this case the level of Openreach FTTP investment in Area 3).

5.3.1.9 *Legal issue*

5.91 Ofcom claims that there are "*potential legal issues with the adaptive regulation*" (V4 §1.74) because "*In order for us to be able to impose a price floor as part of the charge control, we would need to be satisfied that the floor is necessary to address the risk that Openreach might engage in excessive pricing or a margin squeeze.*" (V4 §1.61).

5.92 In a request for clarification of this Ofcom stated:

> *Our power to set a price control as a SMP condition derives from section 87(9) of the Communications Act 2003, and is subject to section 88.*
>
> *Section 88(1)(a) provides that we may only set such a condition where (among other things) it appears to us that there is a relevant risk of adverse effects arising from price distortion.*
>
> *Section 88(3) provides that there is such a relevant risk if the dominant provider might (a) fix and maintain some or all of his prices at an excessively high level, or (b) impose a price squeeze, so as to have adverse consequences for end-users of public electronic communications services.*
>
> *To exercise our power to impose a price control as a SMP condition, we would therefore need to be satisfied that the floor is necessary to address one of these risks.*

5.93 Ofcom seems to be suggesting that it can only impose a charge control if there is a risk of excessive pricing or a margin squeeze. This is incorrect.

- Section 88(3) does not state that excessive prices and price squeeze are the only circumstances where there might be price distortion, merely providing these as clear examples of cases where there would be such a price distortion. TalkTalk submits that predatory pricing, which a price floor is designed to prevent, would be another such price distortion.
- Nothing in section 88 expressly excludes the possibility of price floors being imposed to further Ofcom's goals. It is instructive that Ofcom has omitted to consider the impact of other relevant parts of s87 and s88 which outline Ofcom's broader objectives which conditions may be aimed to meet. For example:

[93] TalkTalk response to remedies consultation June 2019

[94] TalkTalk response to remedies consultation June 2019

[95] Particularly under the ex-post approach where MPF and FTTC prices are altered to reflect actual Openreach build.

- Section 88(1)(b), which states that Ofcom may impose a condition where it is "*appropriate for the purposes of promoting efficiency, promoting sustainable competition, and conferring the greatest possible benefits on end users of public electronic communications services*"
- Section 87(4) "*OFCOM must take into account, in particular … the need to secure effective competition (including, where it appears to OFCOM to be appropriate, economically efficient infrastructure based competition) in the long term*";

Adaptive regulation would better meet these objectives, as it promotes sustainable competition between networks (or infrastructures) and confers considerably greater benefits on end users than Ofcom's current proposals.

- EECC art 74 / Access Directive art 13(1) which set out NRAs' power to impose both price controls and other obligations are relatively broad and flexible: "*relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems"*.
- Ofcom has previously imposed SMP conditions (known as Basis of Charges obligations[96]) that include price floors within them

5.94 However, importantly, if Ofcom is right that does not have the powers to impose a price floor to address the risk of predatory pricing under an adaptive regulation model then equally it cannot impose CPI+0% indexation combined with a geographic discount prohibition since the objective and effect of these conditions together is to prevent predatory pricing not to address a risk of excessive pricing or price squeeze.

5.95 This much is clear from Ofcom's statement that it aims to encourage altnet FTTP investment (V4 §1.4) through ensuring higher wholesale prices (and avoiding lower prices) to allow higher margins for altnet FTTP investment (V4 §1.16) and that the combination of a price cap and geographic discount prohibition will mean that Openreach will not set prices below the cap so in effect it will act as a price floor (V4 §1.20c)[97][98]:

we propose to exercise our discretion in setting these controls in favour of an approach that supports investment in fibre networks through promoting network competition (V4 §1.4)

[we consider] that higher wholesale prices for Openreach services allow for higher margins on competing services supplied by alternative networks (V4 §1.16)

[96] For example SMP Condition 6 of *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 – Volume 2: LLU and WLR Charge Controls*, 26 June 2014

[97] The price cap acts as a *de facto* price floor because it is not in Openreach's commercial interests to reduce prices below the cap in areas where it faces competition since such competition "*will be limited*".

[98] See also §15.88 "*We consider that the prohibition on geographic discounts remedy we are proposing is a simpler and more proportionate means of addressing our competition concern*." The competition concern here is Openreach predatory pricing.

Some stakeholders suggested pricing continuity may [result in Openreach pricing below the cap][99]. We expect network competition to put downward pressure on prices in the long term. However, until that network competition is established, we would not expect significant reductions in Openreach's wholesale prices for MPF and FTTC 40/10 products (which are currently priced to the level of the cap). This is because the geographic coverage of alternative networks will initially be limited, Openreach traditionally has not varied its wholesale prices geographically, and we are proposing to limit Openreach's ability to respond through targeting discounts geographically (see Annex 15). We consider that prices over this period would be likely to affect telecoms providers' views of how attractive it is to continue relying on Openreach versus considering alternative network providers (V4 §1.20c)

5.96 In other words, Ofcom's regulation are not designed to prevent excessive pricing or a price squeeze – rather they are designed to prevent predatory pricing.

5.97 Therefore, the 'legal issue' that Ofcom has highlighted is not a reason to favour CPI+0% indexation over adaptive regulation. Either the legal issue is not in practice a barrier, or if it a barrier then it is equally a barrier to Ofcom's proposed CPI+0% indexation plus geographic discount prohibition.

5.3.1.10 *Issues Ofcom has overlooked*

5.98 There are a number of important factors that Ofcom has overlooked in its assessment which, on proper assessment, show that adaptive regulation provides greater benefits to consumers than CPI+0% indexation.

5.99 First, Ofcom ignores in its assessment of adaptive regulation the benefits that result from a price floor providing greater certainty against exclusionary behaviour by Openreach[100] than a price cap (combined with a geographic discount prohibition). Such seeming lack of concern is surprising since Ofcom accepts that Openreach has clear incentives to deter competition:

- there is a "*strong incentive on Openreach to seek to stifle the emergence of new competitors*" (V3 §1.26);
- "*We are concerned that BT, through Openreach, may adopt wholesale pricing structures which would deter alternative network rollout*"(§A15.1);
- "*Openreach faces a substantial erosion of its market share where new networks are built, and therefore it is likely to have incentives to deter new build*" (§A15.5); and,
- "*Our concern is that Openreach may use geographically targeted price reductions, which involve charging different prices for the same wholesale access, in order to*

[99] V4 §1.20c said: "pricing continuity may not have an impact on post-entry retail prices, as these will be driven by competition". We asked Ofcom to clarify what it meant by this and it explained that it means by this that Openreach price below the cap.

[100] There could be a number of forms of exclusionary behaviour designed to deter entry such as intentionally building in areas where altnets have planned or just built FTTP or reducing prices in areas where altnets have built FTTP. The behaviour does not necessarily have to be abusive, and may result from meeting competition—for example, price matching.

deter rollout in areas where others are starting/planning to roll out new fibre networks" (§A15.7)

5.100 Ofcom also agrees that a price floor provides better protection against exclusionary behaviour – see §A15.86.

5.101 Second, Ofcom has ignored the question of which approach is more robust to forecast errors– that is, in the case where actual market conditions deviate from those projected by Ofcom, which approach better serves consumers' interests. It is inevitable that Ofcom's forecast of FTTP build will be inaccurate to some degree. Given the amount of change forecast and the large degree of uncertainty due to funding and cost uncertainty (see section 3.2) the level of inaccuracy is likely to be high. For example, if fewer than 10m homes are passed by altnets then under Ofcom's proposals more customers will suffer higher FTTC prices without an alternative FTTP network to migrate to. Adaptive regulation does not suffer from this downside since it adapts to market conditions. Ofcom has failed to take account of this impact.

5.102 Third, Ofcom overlooks that CPI+0% indexation will likely erode investor certainty over the medium to long term since it will entail regulation drastically changing without any robust evidence or justification. Adaptive regulation, in contrast, is more aligned with current regulation than Ofcom's approach – FTTC prices will remain cost-based, as they are today, unless the market and competitive conditions change which objectively justify it.

5.103 Lastly, Ofcom has not taken into account that under adaptive regulation the increase in retail prices once wholesale FTTC prices rise post-entry will be dampened to some degree by geographic price averaging (see §5.107 below).

5.3.2 *Summary*

5.104 Table 5.3 summarises Ofcom's assessment of adaptive regulation versus Ofcom's CPI+0% proposal, and a corrected assessment.

Table 5.3: Impacts of higher wholesale FTTC prices in CPI+0% indexation versus adaptive regulation

Criteria	Ofcom assessment	Corrected assessment
Efficiency of price rise in stimulating FTTP investment	Asserted that "*significant and positive*" impact from CPI+0%. No supporting evidence	Only 1% of £930m retail price increases goes to altnet FTTP in higher revenue. Adaptive regulation more efficient – same impact but retail price increase £270m
Increase in retail prices post-entry	Not considered	Under adaptive regulation post-entry retail price increases will be less
Protection from predatory pricing	Not considered	Adaptive regulation provides more certainty of protection
Jeopardy	Adaptive regulation not create necessary jeopardy	Difference in incentives is small as evidenced by actual behaviour

Impact of non-BT market share erosion	Asserted not "*significant damage*". No supporting evidence	Likely to reduce average returns by 0.04%. Adaptive regulation avoids this
Perceived certainty	Not considered	Adaptive regulation objective so provides greater regulatory certainty
Investor understanding	Investors (e.g. Goldmans) unable to understand how adaptive regulation works	Investors well able to understand and take account of adaptive regulation
Openreach investment	Higher Openreach investment since more altnet investment	Will not be more altnet investment
Impact higher w/s FTTC prices on Openreach investment	Ignored	Higher wholesale prices will reduce Openreach investment incentives
Impact excess profits on Openreach investment	Openreach will divert higher profits into FTTP investment	No economic rationale for this
Excessive prices	Floor may result in excessive price levels	Ofcom's approach more likely to result in excessive price level and will apply to more customers
Whether benefits outweigh costs	Cost-benefit analysis presumes policy causes 5m additional FTTP build by 2026	5m is wrong. Will be very limited additional investment (or less investment if consider erosion effect). Significant cost of increased retail prices of about £900m
Robustness to forecast inaccuracy	Not considered	Under adaptive regulation consumers protected in case altnet build differs
Whether onerous	Floor more onerous	True but not significant burden and anyway secondary consideration
Consistency with existing regulation	CPI+0% indexation consistent and represent continuity	CPI+0% indexation is patently more of a departure from existing regulation
Legal issues	Setting price floor in adaptive regulation not permitted in Communications Act	Probably not true and if true legal issues equally apply to CPI+0% indexation plus geographic discount prohibition since its purpose and effect is to create a price floor

5.105 In summary, adaptive regulation delivers the same (albeit small) positive impact on investment as Ofcom's proposals, but avoids the negative effect from erosion and also, because it is better targeted, results in much lower increases in consumer prices.

5.3.3 *Frontier Economics' assessment of adaptive regulation*

5.106 The annexed Frontier Economics report provides an objective and balanced view of both the advantages and disadvantages of adaptive regulation, taking into account the many factors Ofcom has missed. It concludes that adaptive regulation, when appropriately compared to CPI+0% indexation, will result in a similar level of FTTP investment (by altnets and Openreach), but deliver clear benefits in terms of lower prices, more effective competition and robustness to forecast error. On the other hand adaptive regulation would be more complex to design and implement.

5.107 Frontier Economics' conclusions are below.

> Adaptive regulation (versus CPI+0% indexation) will result in a similar level of altnet FTTP build reflecting the following countervailing factors:
>
> - Adaptive regulation will increase altnet FTTP investment incentives since it allows higher non-BT ISP scale and provides stronger protection against exclusionary behaviour by Openreach; whereas
> - Adaptive regulation will decrease altnet FTTP investment incentives since it is likely to dampen retail price increases due to national price averaging and will reduce ISPs' incentives to commit to altnet FTTP investment though, in practice, they considered the impact was "*likely to be small*"[101];.
> - The lower price before investment would not directly deter altnet entry, since returns only depend on post-entry price levels.
>
> Adaptive regulation will result in a similar (or, if anything, marginally increased) Openreach FTTP build:
>
> - since there would be a similar level of altnet build under the two approaches the competitive pressure on Openreach to build FTTP would be similar; and,
> - in areas where there was no altnet MSN threat (Area 2b and Area 3) BT's incentives to build FTTP would be stronger under adaptive regulation, since the net impact of higher FTTC prices would be to reduce BT's FTTP investment incentive.
>
> There would be an unambiguous benefit to customers from adaptive regulation through lower retail prices in all locations in the period before altnets invest in FTTP and throughout the period in the 50% of Area 2 where altnet FTTP investment will not occur by 2026. Frontier Economics estimated the impact over the period of the review to be about £600m in higher retail prices under Ofcom's proposals.
>
> There would be an unambiguous benefit to customers from adaptive regulation through more effective competition in the short/medium term and throughout the period in Area 2b.
>
> In the case of forecast error (e.g. less altnet build than forecast) adaptive regulation would better serve consumers' interests
>
> Adaptive regulation would, on the other hand, be more complex to implement

5.114 Overall, Frontier was of the view that the only material disadvantage of adaptive regulation would be implementation complexity. TalkTalk agrees with Frontier Economics that adaptive regulation would be more complex than the CPI+0% indexation approach. However, as we explain above the burden is not significant – indeed Ofcom told us that it was not concerned about adaptive being too complex or difficult to implement. In any case, administrative burden is a secondary consideration compared to the primary objectives of encouraging investment and protecting consumers.

[101] [✂].

5.115 Therefore, on an objective basis adaptive regulation is superior to CPI+0% indexation.

5.4 WLA – Area 2 pricing

5.116 The analysis above shows that both adaptive regulation and cost-based wholesale FTTC prices would, compared to Ofcom's CPI+0% indexation proposal, lead to greater altnet FTTP investment, greater Openreach FTTP investment, and lower consumer prices. Adaptive regulation will lead to more investment than cost-based prices because altnets will gain higher revenues, in turn incentivising Openreach FTTP investment. We consider that in Area 2 adaptive regulation may best meet Ofcom's dual objectives of FTTP investment and protecting consumers.

5.117 If however, Ofcom does not adopt adaptive regulation in Area 2[102] and maintains a price indexation approach there are other two changes it should make which would better achieve its objectives of promoting FTTP investment and protecting consumers. We discuss these below and then discuss the proposed prohibition on geographic discounts.

5.4.1 *Change index to CPI-2%*

5.118 Ofcom should consider what level of price indexation is appropriate in order to best meet its objective (e.g. CPI+0% or CPI-3%). The lack of any assessment of alternative pricing proposals is a significant omission in Ofcom's consultation. When TalkTalk met Ofcom in January we asked why they had not considered alternative indices. In response they indicated that they preferred CPI+0% since it was simple (presumably since it has a zero in it). This is an inadequate reason for adopting this index: there is no economic benefit to consumers from something that is simple, and stakeholders are well-able to understand different index levels. Furthermore, if Ofcom wanted the simplest approach surely a 0% (or CPI-CPI) index would be simpler.

5.119 The appropriate index should be based on what will best meet Ofcom's objectives: encouraging FTTP investment (particularly from altnets) and protecting consumers. Clearly the higher the price the greater the harm to consumers – therefore, the index should be no higher than is required to encourage efficient altnet FTTP investment. Based on this test and using Ofcom's own cost data, we think the index should be set at between CPI-6% and CPI-2%. Our reasoning for this is as follows:

- The FTTP rental price for an efficient altnet FTTP to recover its costs is £8.50 to £12.75 (§A17.95) (increasing each year by CPI[103]), meaning the required price in FY2026 is £9.38 to £14.08
- FTTP can command a price premium over FTTC of £1.50 to £4.00 (see V4 §A1.80b). Elsewhere in the document says the premium is £1.50 to £1.85 so we (conservatively) assume the mid-point of these of £1.68[104]

[102] Or if it does not adopt cost-based prices.

[103] Email from Keith Hatfield (Ofcom) to Andrew Heaney (TalkTalk), 18 May 2020

[104] Rising in line with CPI, so £1.85 in FY2026

- This implies that the FTTC price in FY2026 that allows FTTP cost recovery is between £7.54 and £12.23 with a mid-point of £9.88.
- The price index that would result in an FTTC price of £9.88 in FY2026 is CPI-6%.

5.120 Therefore, based on Ofcom's own data an index of CPI-6% would allow sufficient margin for altnet FTTP investment (assuming mid-point costs). Even in a conservative case when the high cost scenario is assumed the required index would be CPI-2%.

5.121 There is no objective justification for using CPI+0% indexation. It is more than is necessary to provide sufficient return for an altnet FTTP investment and harms customers unnecessarily – using a CPI-2% index will reduce retail prices by £460m compared to Ofcom's CPI+0% proposal. Ofcom's proposed price cap would also ameliorate the digital divide, and better meet Ofcom's objectives to protect vulnerable customers and struggling businesses during a period of severe economic decline and increasing inequalities.

5.4.2 *Correct geographic market analysis*

5.122 Ofcom must correct its market analysis so that there are three different geographic markets in what is now defined as Area 2 – as discussed in §4.89. Area 2 as currently proposed includes areas with substantially different competitive conditions. Ofcom is legally required to define geographic markets that are "*sufficiently homogeneous*" to ensure remedies are suitable and do not harm subsets of consumers. The appropriate remedy in each market within Area 2 will differ. For instance, in Area 2b (Openreach, Virgin and no planned altnet FTTP) there can be no reason for or benefit from wholesale prices above cost to stimulate FTTP investment since no FTTP investment is likely – here prices should be set at cost. Conversely, in Area 2a and 2c where there is planned altnet FTTP investment wholesale prices above cost (as under CPI+0% indexation) may have some impact.

5.4.3 *Impose restrictions on geographic discounts*

5.123 Ofcom has proposed obligations to prevent Openreach from introducing geographic price discounts to reduce prices which might deter altnet FTTP investment (see Annex 15). This regulation would not be required under adaptive regulation since altnets know that once they enter they would be protected from price reductions by the floor. However, in the case that a cap is applied throughout the period a prohibition on geographic discounts as proposed by Ofcom should be imposed. We have a number of comments on Ofcom's proposals:

- There is no objective reason to exclude connection charges from the prohibition (§A15.35). Ofcom is correct that its impact is less than rental charges but that provides no reason to exclude – excluding it could allow discrimination.
- We prefer the approach (option 1, §A15.63) where Ofcom prohibits certain terms unless it explicitly consent rather than the alternative (option 2) where it has the option to block any new terms that Openreach propose to introduce. This is primarily because option 1 gives altnet investors more certainty of future regulation which is critical to reducing risk and stimulating investment

- The prohibition should apply to all WLA products (e.g. MPF, FTTC, G.fast and FTTP) in Area 2

5.4.4 *Provision for late completion of next review*

5.124 Ofcom has missed the deadlines for imposing new regulation in most of its recent market reviews. This has resulted in Openreach making voluntary commitments for the lacuna period. However, the very nature of requesting voluntary commitments allows Openreach to exploit its market power, as it inevitably will not offer the same terms as regulation would have imposed on it. It also creates uncertainty. Therefore, Ofcom should lay out in this review the regulation that would be effective after March 2026 in the case that the next market review is late. This approach should apply for all regulation e.g. for passive infrastructure market and business connectivity market.

5.5 Areas 3 remedies

5.125 In this section we discuss Ofcom's proposals to impose a novel RAB approach to setting MPF/FTTC charges in Area 3. We first discuss Ofcom's objectives in Area 3 (section 4.6.1), then assess the proposed RAB approach (section 4.6.2), alternatives to the RAB approach (section 4.6.3) and lastly Ofcom's proposals for a glidepath (section 4.6.4).

5.5.1 *Objectives in Area 3*

5.126 Area 3 is characterised, compared to Area 2, by little current network competition, higher FTTP build costs and limited plans by altnets to invest in FTTP. This will mean that Openreach's incentives to invest in FTTP in Area 3 are weak – either FTTP build is unviable or even if it is viable then Openreach will, given limited capital and labour resources, prefer to invest to Area 2 where build costs are lower (and returns higher) and there is an altnet FTTP threat.

5.127 In light of this Ofcom has set two objectives: "*an approach sets appropriate incentives for BT to invest in fibre networks, while protecting consumers from excessive pricing (including through a weakening of retail competition)*" (V4 §2.6). The key difference in these objectives, compared to those for Area 2, is that Ofcom has no objective to incentivise altnet FTTP investment.

5.128 Whilst we agree with these two objectives Ofcom has made a number of errors in targeting them:

- Ofcom is incorrect to overlook existing and potential altnet FTTP investment in Area 3. Whilst there may be more limited plans for altnet FTTP investment in Area 3 than in Area 2 there is the possibility of some altnet FTTP investment particularly with the planned £5bn government subsidy scheme which is intended to foster and depends on competition.
- Ofcom has paid lip service to the "*protecting customers*" objective as demonstrated by the absence of any consideration of the harmful effects of a RAB approach on consumers in Area 3 or alternatives that might mitigate the harm.

- Ofcom has not considered the material impacts of the RAB approach outside of Area 3 such as investment levels in Area 2

5.129 We also note that Ofcom considered a very limited number of options (V4 §2.11): the RAB approach and briefly maintaining the current approach (which has no subsidy) as well as the 'copper wedge'. Ofcom should have considered other types of subsidy scheme or options including adaptive regulation which we proposed for Area 3 in our previous submission.

5.5.2 *Ofcom's RAB proposal*

5.130 In this section we summarise how the RAB approach will work. In following sections we examine the use of RAB in other industries and how the conditions in this case differ (section 5.5.3) and then we assess the advantages and disadvantages of a RAB approach and whether it meets Ofcom's objectives (section 5.5.4). Lastly, we consider Ofcom's proposals for the design of the RAB (section 5.5.5).

5.131 Under Ofcom's proposed RAB approach if Openreach invests in FTTP in Area 3, then the losses on these investment can be recovered from other services in Area 3, including MPF/FTTC. This effectively creates a cross-subsidy from Openreach MPF/FTTC customers in Area 3 to cover Openreach FTTP investment losses in Area 3. Thus the MPF/FTTC charges are set in the following way:

- MPF/FTTC charges (for all bandwidths) are set based on Openreach cost excluding the HON adjustment;
- An uplift or mark-up (referred to as the 'k-factor') is added to these charges to 'fund' losses on Openreach FTTP investment[105]

5.132 Ofcom has proposed two versions of how a RAB approach could work.

- a forecast approach where Openreach commits in advance to an amount of future FTTP build and the k-factor is set at the start of the period based on this commitment.
- alternatively, an ex-post approach where a k-factor is set based on the actual build that is delivered.

5.133 We discuss these options below at section 5.5.2.4.

5.5.3 *Use of RAB in other industries*

5.134 Ofcom seems to have adopted a RAB approach in part because it has been successfully used in other regulated utility industries such as the network elements of energy, water, rail and airports. According to BEIS, as of 2018 the total RAB value across the UK electricity, gas,

[105] The losses are recovered across all WLA services (e.g. MPF, FTTC and FTTP) in Area 3. Whilst FTTP volumes are low (which is the case for this review period) then the majority of the losses are recovered from MPF/FTTC. Whilst the allocation of the losses to MPF/FTTC results in higher prices and additional revenue for Openreach, any of the losses allocated to FTTP will not result in higher prices or revenues since FTTP prices are not regulated.

water and airport sectors was almost £160bn.[106] However, Ofcom has not considered whether the characteristics of those industries that led to a RAB approach being successful are present for Openreach FTTP investment in Area 3.

5.135 Below we consider a number of the characteristics of those other industries that have led to the success of a RAB approach and whether they are prevalent for Openreach FTTP investment in Area 3.

5.5.3.1 *Whether network is natural monopoly*

5.136 RAB models in other industries have been used for network elements which are natural monopolies due either to their cost structures or to the need for a single system operator.

5.137 Broadband networks are not a natural monopoly across all of Area 3, at least when the entrant can offer a meaningful quality advantage over incumbents, such as when an FTTP network overbuilds an FTTC network. There are existing altnet FTTP investments in Area 3 and more are planned by investors such as Gigaclear and B4RN which compete against Openreach's copper/FTTC network and will do so for some time. Furthermore, there is likely to be some competitive constraint on FTTP from 5G mobile and possibly also at the end of the period from satellite and fixed wireless access products (albeit more speculatively).

5.138 Introducing a RAB approach in a market where competition is feasible creates two harmful effects:

- the RAB may distort this competition since Openreach will be subsidised while its rivals will not be; and,
- Openreach may not be able to recover its FTTP costs since customers, particularly MPF and FTTP customers, may switch to these other networks.

5.139 Another reason why there can be a natural monopoly is where there is a need for a single 'system operator' to manage access to and use of the network (e.g. 'balance' the network to ensure its safe operation), coordinate maintenance activities and ensure adequate planning of long-term investment.[107] This is not the case for FTTP networks.

5.140 Notably, the RAB approach considered in the Q4 review of BAA airports (2003-2008) was withdrawn since it would have created a cross-subsidy which would distort competition between different airports and indeed different airlines.[108] The CAA argued that if the

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[106] BEIS, Consultation reference: Consultation on a Regulated Asset Base (RAB) Model for Nuclear, July 2019, page 10. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825119/rab-model-for-nuclear-consultation.pdf

[107] For example, the system operator of an electricity network (such a National Grid) dispatches generators to meet demand and procures 'ancillary services' to ensure the system operates safely. Similarly, system operators adjust the pressure in gas and water networks to regulate the physical flows of the commodity according to demand and supply conditions. In railways, Network Rail carries out the functions of the system operator.

[108] CAA (2003), *Economic Regulation of BAA London Airports: CAA decision*, February, at §§3.18-3.22

Government wished to prioritise development at Stansted that it would be free to do this this but not via a subsidy from Heathrow. In the subsequent Q5 review of BAA's airports, the CAA issued a separate consultation paper on the issue of cross-subsidies between airports, once again concluding that no cross-subsidies should be permitted.[109]

5.5.3.2 *Openreach has choice of if and where to build*

5.141 In other cases where a RAB model is used the providers have little choice of whether they will extend their networks since they have to provide near universal reach and uptake is close to 100%. In contrast Openreach in this review period can choose whether and where to invest in FTTP. Using a RAB model in this situation allows Openreach to 'cherry pick' locations to invest which, given Ofcom's proposed designed will allow Openreach to over-recover its costs. For example, the use of the same averaged k-factor for most homes means that Openreach can and will choose to invest in those areas where the costs are lower. We describe the potential for over-recovery in §5.160 below.

5.5.3.3 *Negative impacts in Area 2*

5.142 In other industries where a RAB model has been used, generally the market is a UK-wide natural monopoly across the UK and the RAB model has applied nationally. In this case, the RAB model only applies in 30% of the UK and so there are potential impacts on other locations (e.g. Area 2) where the RAB model does not apply. In this case, there are a number of harmful effects that will arise:

- The RAB approach will distort FTTP investment incentives in Area 2, by deterring investment by firms other than Openreach. Similar concerns about distorting competition have been voiced with respect to BEIS's proposals for a RAB approach for new nuclear generation, which would be in competition with other non-subsidised low-carbon power sources.[110]
- The RAB model risks crowding out Openreach FTTP investments in the more marginal areas within Area 2 since both Openreach and altnets will face capacity constraints at regional and national levels – this is discussed in §5.24. The RAB model risks bidding up the price for resources- such as staff and equipment- required to roll out FTTP networks, and thereby reducing FTTP investments by altnet FTTP builders in Area 2.

5.5.3.4 *Revenue and cost uncertainty*

5.143 RAB models are necessarily based on forecasts of revenues and costs. In the case of FTTP the revenues and costs are much less predictable than in the other cases where RAB approaches are used, which are characterised by mature networks, proven technology and predictable willingness to pay and demand. Conversely FTTP is at an immature stage

[109] CAA (2006), *CAA's initial price control proposals for Heathrow, Gatwick and Stansted airports: Supporting Paper I, Separate Regulation of Airports*, December.

[110] BEIS's parallel consultation on the application or a RAB model for other large-scale, firm low carbon technologies, such as transport and storage infrastructure for carbon dioxide, is also consistent with BEIS's desire to maintain a level playing field among competing technologies.

meaning that current and future asset reuse levels, build costs, operating costs, cost of capital, pricing levels and uptake are all uncertain. Introducing a RAB model when there is high uncertainty has a number of harmful effects:

- It will lead to over-recovery or under-investment since if Ofcom overestimates costs (or underestimates revenue) Openreach will over-recover or conversely if it underestimates costs then Openreach will not invest – this dynamic is discussed further at §5.160.
- It creates opportunity for gaming by Openreach who will use its greater knowledge of costs and revenues (i.e. information asymmetry) to inflate costs and reattribute costs to areas/products that are regulated

5.144 This uncertainty is amplified because Openreach offers a wide range of products, both in broadband network markets and in other markets such as leased lines across the whole of the UK, making it more difficult to estimate the WACC for FTTP rollout in Area 3.

5.5.3.5 *Interplay with other Government subsidy schemes*

5.145 Ofcom's RAB proposal risks undermining the Government's £5bn UK Gigabit Broadband subsidy scheme, which is designed to encourage FTTP roll-out in the most costly areas of the UK. We are not aware of comparable subsidy schemes in other industries. The Government's intention is that this subsidy can be competed for by different providers which will help ensure value for money. The RAB approach will undermine this since Openreach (and only Openreach) will have access to a cross-subsidy that other operators do not, providing it with a near-insuperable advantage in bidding for government contracts – see §5.149 below.

5.5.3.6 *Summary*

5.146 The table below summarises the suitability of using a RAB model for FTTP investment in Area 3 and in other industries, based on whether each industry has the features that make a RAB model effective. The colour coding reflects the degree to which each industry displays features which are compatible with a RAB approach – green indicates that RAB approach is suitable for that industry/market whereas red indicates it is unsuitable. The diagram shows that the RAB approach is much less suitable for FTTP deployment in Area 3 than other industries.

Table 5.4: Suitability of RAB model to different industries

Feature	FTTP in Area 3	Water	Elec / gas trans / dist	Nuclear generation	Airports
Natural monopoly	N	Y	Y	Y	Y
"System Operator"	N	Y	Y	N	Y
Predictable costs	N	Y	Y	N	Y
Predictable revenues	N	Y	Y	N	N
RAB national	N	Y	Y	N	N

Choice of build level	Y	N	N	N	?
Conflict with other subsidies	Y	N	N	?	?

Source: TalkTalk analysis

5.5.4 *Assessment of impacts of RAB approach*

5.147 The RAB model will evidently increase Openreach's incentives to invest in FTTP in Area 3 to some degree. However, Ofcom must conduct a thorough assessment of regulation which considers the wider impacts. Ofcom has not done this. Below we consider the impacts of a RAB approach and whether it is likely to meet consumers' interests. In particular, we consider:

- Impact on altnet FTTP investment in Area 3 and on the proposed Government subsidy scheme;
- Impact on Openreach investment in Area 3;
- Impact on Openreach investment in Area 2;
- Whether the approach is likely to result in over-recovery or underinvestment;
- Legal concerns with RAB approach;
- Other impacts on consumers such as distributional impacts and effects on retail competition.

5.5.4.1 *RAB approach forecloses altnet FTTP and undermines Government subsidy scheme*

5.148 Though Area 3 is defined as postcode sectors where there are no existing or planned altnets, in practice there are existing and planned altnet networks in Area 3 – MSNs that are not recognised by Ofcom since their networks do not reach 50% of the postcode sector and broadband-only operators which are not accounted for at all in Ofcom's market analysis. There may also be altnets without current plans who may invest in future (absent Openreach being subsidised). Therefore, the reality is that there is potential for some competitive altnet investment in Area 3.

5.149 Ofcom's proposals will provide a significant and unmatchable advantage to Openreach. The proposed k-factor applied to MPF/FTTC lines in Area 3 is £0.34[111] per million homes passed. This provides Openreach with a subsidy worth about £2.70[112] per month or £370 one-off[113]. Given the CAPEX for the most likely build areas is £500-£650 per home passed[114], the subsidy will effectively cover the majority of Openreach's CAPEX in the lower cost parts of Area 3.

[111] Average k-factor £0.34 per million homes passed derived from data in Table A18.4. This shows k-factor for 7m homes of £1.54 to £3.15. We assumed a central case mid-way between two estimates.

[112] 9.2m homes in Area 3 and assume that 8m on MPF/FTTC (or WLR whose price will also increase). £2.70 = £0.34 x 8m

[113] Assuming it is maintained over the full lifetime of the assets. TalkTalk would assume, under a RAB model, that for the purposes of regulatory consistency it would have to be maintained in this way.

[114] Cost range for first 3m homes – Table A18.3

This degree of subsidy would have a very large distorting effect on competition, making rival build in an area unviable if there is any prospect of Openreach build in the same area.

5.150 Despite this Ofcom claims that its approach aids altnet investment: "*… higher prices for copper services from the beginning of the control could have a positive impact on rival network investment.*" (V4 §2.28)[115] This shows bias, in that Ofcom has highlighted the small positive impact of its proposal but ignored the much larger negative impact. This can be seen by a simple calculation.

5.151 For illustrative purposes we consider a scenario where Openreach is building FTTP to 2m homes under the RAB scheme which results in a k-factor uplift in wholesale MPF/FTTC prices of £0.67 across customers in Area 3. As set out above, this is equivalent to a subsidy to Openreach of £2.70 per month per home passed in areas where it build FTTP. If an altnet is planning to build in the same area as Openreach the increase in altnet revenue due to the k-factor will be about £0.10 per month[116]. Thus the negative subsidy effect on altnet investment in Openreach FTTP areas is over 25 times the size of the positive price effect. It is biased for Ofcom to highlight the price effect but ignore the far larger negative subsidy effect.

5.152 By subsidising Openreach's (and only Openreach's) FTTP build Ofcom is effectively precluding or significantly reducing the potential for altnet FTTP build. This is because it will be difficult for an altnet to compete against a subsided Openreach particularly given that Openreach already holds many advantages such as higher asset reuse, existing wholesale relationships, and BT as an anchor customer. It may be that existing altnet FTTP investments are rendered unprofitable and they will exit. Thus the predominating impact on altnets is negative[117].

5.153 Ofcom's approach effectively ossifies areas where altnet FTTP investment can occur and cannot occur. It is premature to take this step given the nascent state of the market.

5.154 Another harmful effect of Ofcom's approach is that it will undermine the Government's £5bn subsidy scheme which is intended to start in 2021. This scheme is designed to encourage FTTP roll-out in the more costly areas of the UK and there is a large overlap with Area 3. The Government scheme is targeted at 6m homes which is about two-thirds of Area 3. The Government's intention is that this subsidy can be competed for by different providers which will help ensure value for money (this is reflected in the design e.g. small lots). The RAB approach will undermine this since Openreach (and only Openreach) will have access to the RAB subsidy that other operators do not, providing it with a near-

[115] Also Ofcom claim that RAB approach "*will not remove all commercial opportunities for rival operators*" (V4 §2.67)

[116] This is less than the £0.67 k-factor due to the dilution effects between wholesale FTTC prices and FTTP prices – see Annex 2 §§2.5, 2.7 (to this submission).

[117] See, for example, Gigaclear's comment in its 7 June 2019 consultation response that '*In consideration of 'non-competitive areas' Ofcom's proposals seek to 'lock out' competition to BT Openreach incumbency, without any consideration of measures that could encourage competition and alternative operator network rollout.*'

insuperable advantage in bidding for government contracts.[118] Furthermore, there is a risk that Openreach will be able to obtain double-subsidies for some parts of its build – for instance, it might commit to a build plan (under the forecast approach) and receive a k-factor to recompense for this but then may also secure subsidy from the Government for these investments.

5.5.4.2 *Openreach investment in Area 3*

5.155 Ofcom seems to have presumed that if a subsidy covers the losses on FTTP investment in Area 3 then Openreach will invest in Area 3. This fails to properly reflect Openreach's incentives to invest. Ofcom correctly highlights that the key factor driving Openreach FTTP investment is the threat of competing altnet investment (V4 §1.23). Therefore, whilst Openreach have limited capital and resources they are likely to focus investment on areas where there is a threat from altnets. Furthermore, the RAB approach will remove the prospect of altnet investment in Area 3 (see above) which will reduce Openreach's incentives to invest. Thus it is far from clear that this approach will resulting in materially more FTTP investment.

5.156 Furthermore, over time as the FTTP customer base increases this RAB approach will not recover the full amount of the loss meaning that even with the RAB scheme Openreach will be unable to break even on Area 3 investments. This is because the loss on FTTP investments is attributed across all WLA services i.e. MPF, FTTC and FTTP – see V4 §2.40c. Any loss that is attributed to FTTP will not result in higher revenue since FTTP prices are not regulated and Openreach will have anyway set the profit maximising price – a notional attribution of a cost to FTTP will not change the profit maximising price. Therefore, the only additional revenue that Openreach will receive under the RAB is the portion of the loss attributed to MPF/FTTC.

5.5.4.3 *RAB approach crowds out FTTP investment in Area 2*

5.157 Ofcom ignores the impact of its approach on Openreach and altnet FTTP investment outside of Area 3.

5.158 In particular, the industry overall and Openreach specifically face material supply side constraints in the ability to roll-out FTTP that arise from limitations on capital funding and barriers to rapidly increasing roll-out such as suitably skilled labour and readiness of the PIA remedy (see §3.19). This means that any increase in Openreach FTTP investment in Area 3 will generally result in less investment in Area 2 as capital and labour is diverted. This impact will be magnified since the cost and labour required for each homes passed in Area 3 is greater than Area 2 so that for every £ and man-hour diverted to Area 3 *fewer* homes across the UK as a whole will be passed by FTTP networks.

[118] There is a significant economic literature on how even small known bidding advantages for one firm in a common values (or mainly common values) auction can lead to that firm winning a very disproportionate number of contracts, as other bidders shade their bids to avoid an exacerbated winner's curse. TalkTalk will be happy to submit supplementary evidence on this topic to Ofcom if it would find it helpful.

5.159 The RAB approach will also tend to bid up the price for resources—such as staff and equipment—required to roll out FTTP networks and therefore will to some degree reduce altnet FTTP investments in Area 2.

5.5.4.4 *Impact on over-recovery and underinvestment*

5.160 There are two features of the RAB approach that are both likely to lead to material over-recovery or underinvestment – one resulting from cost uncertainty and one from Ofcom's design of the k-factor. We describe each below.

5.161 Openreach has a choice of whether to invest in FTTP. The return they get will depend on Ofcom's forecasts for revenues and costs and the resulting k-factor. If Ofcom overestimates costs (or underestimates revenues) then Openreach will choose to invest and over-recover its costs. Because there is high uncertainty (and variance) in revenues and costs[119], reflecting the nascent stage of the market, the potential for over-recovery is high. Conversely, if Ofcom underestimates costs (or overestimates revenues) then Openreach will not invest thus not meeting Ofcom's objective. In practice, Ofcom might bias its costs estimates upwards thus the likely impact of uncertainty is more likely to be over-recovery rather than underinvestment.

5.162 Even where Ofcom overestimates the cost to Openreach of investing in FTTP, this may still be insufficient to lead to Openreach investing. This is because of the presence of a real option held by Openreach, allowing it at each point in time to build (and give up the real option) or delay (and hold the real option for the next period). This creates a guaranteed windfall: Openreach will only invest when expected returns are not only above the cost of capital, but above by a sufficiently large amount to offset the value of the real option which is given up. The value of the real option will be greatest at the start of the period, when there is the greatest demand and cost uncertainty. The higher the expected variance in both revenue and cost from period to period, the more incentive Openreach will have to wait until it is more profitable to invest. [120] Openreach's hurdle rate is therefore likely to be well in excess of its cost of capital.

5.163 Ofcom has chosen to set a single 'averaged' k-factor £0.34 per year uplift in wholesale prices per million FTTP homes passed[121]) for the first 7m homes passed.

> *"… in setting the charge controls we propose to smooth out the K factors based on the average build and connection costs across 7 million premises within Area 3. We do not necessarily believe that Openreach will deploy to these 7 million premises. Rather we*

[119] Current and future asset reuse levels, build costs, operating costs, cost of capital, pricing levels and uptake are all relatively unpredictable.

[120] Note that the real option is likely to be worth considerably more in Area 3 (where there is no threat of entry, and Openreach can therefore wait for ideal demand and supply conditions) than in Area 2 (where waiting runs the risk that an altnet will enter and render the real option worthless in any period, and where there is likely to be substantial first mover advantage). The presence of real options will therefore tend further to skew investment towards Area 2 rather than Area 3.

[121] This is the mid-case from §A18.48 "*… we have estimated a K factor in the range of £0.04 per month and £0.09 per month for each 200,000 tranche of Openreach's fibre network deployment (in real terms). This is equivalent to £0.22 per month to £0.45 per month for each million premises Openreach passes*".

believe that the average cost of deploying to these 7 million premises will be representative of the average cost that Openreach will face when building in Area 3." (§A18.47)

5.164 However, because costs differ substantially between areas the required k-factor will be less for some homes (where costs are lower than average) and higher for others (where costs are higher). For example, the required k-factor (to make an investment viable) for the first 1m homes is £0.20[122] per year. Imposing a single averaged k-factor when the required k-factor differs so much will mean that Openreach will cherry-pick where it will invest:

- it will invest in homes where costs are lower and the required k-factor is less than the averaged k-factor leading to over-recovery;[123]
- it will not invest where the required k-factor is higher than the averaged k-factor leading to under-investment.

5.165 We recognise that Openreach might not be able to perfectly cherry pick just the lowest cost areas e.g. it may build to some high cost premises to complete an exchange area. However, it will be able to cherry pick to a large degree – essentially by avoiding building in exchange areas with higher than average costs.

5.5.4.5 *State aid*

5.166 Ofcom appears not to have considered whether the proposed approach in Area 3 constitutes state aid and is therefore illegal. As we set out in our previous submission, the proposals could be characterised as a levy which is placed on MPF and FTTC customers in Area 3, and which is then provided to Openreach in order to subsidise its FTTP rollout. It is possible that the proposals meet the criteria to be considered state aid:

- *There must be aid in the sense of an economic advantage*– this arises from the fact that, without the intervention proposed by Ofcom, Openreach would not roll out its fibre network in those areas where it expects an FTTP investment is otherwise not viable;
- *The advantage must be granted directly or indirectly through State resources and must be imputable to the State*– while case law in this area is complex, the Commission previously found in its Thames Tideway Tunnel project decision that a similar approach did involve state resources;[124]

[122] The document does not provide a number for the k-factor for the first million homes. Instead it was derived from the "RAB model NON CONFIDENTIAL". The model uses randomised inputs but we assume that that ratios of k-factors are broadly correct. The k-factor for first million homes is £0.26 versus average £0.44 (based on central estimates). Thus using the £0.34 central estimate for the averaged k-factor from the document implies a £0.20 k-factor for first million homes (= £0.26 x £0.34 / £0.44)

[123] Under Ofcom's proposal 4m homes have a k-factor below the average (and will lead to over-recovery) and 3m have a k-factor below (where there will be no investment).

[124] Case SA.37045

- *The measure must favour certain undertakings or the production of certain goods*– the measure clearly, and only, favours Openreach, and this criterion is therefore fulfilled;
- *The measure must be liable to distort competition and affect trade between Member States*– the threshold for this criterion is low, and it has previously been set out in the Commission decision regarding subsidies for rural broadband in the UK that these would impact trade between Member States. As we explain above the RAB approach is highly likely to distort investment and competition.

5.167 Ofcom should therefore undertake a full assessment of whether its proposed scheme — or any scheme like it — would represent state aid.

5.5.4.6 *Legal concerns*

5.168 It is not clear whether Ofcom has the powers to impose a RAB approach. As Ofcom has pointed out in another context, Ofcom considers that it only has the power to impose a price control if it addresses the risk of a price distortion arising from excessive prices or a price squeeze[125][126]. The proposed RAB charge control does not meet this test since it expressly allows a price distortion (due to excessive prices) –it cannot be said that the price control addresses the risk of a price distortion from excessive prices.

5.169 It is notable that Ofcom considered that Ofcom considered that it did not have the powers to implement the Copper Wedge proposal (V4 §4.170). Ofcom said: "*We remain doubtful that an obligation on BT to ringfence a portion of the access price it receives and deploy these funds as Ofcom directs could be properly construed as a price control or a rule about the recovery of costs and cost orientation*". These exact same concerns arise with the RAB proposal since it creates "*an obligation on BT to ringfence a portion of the access price it receives and deploy these funds as Ofcom directs".* Thus, on Ofcom's own analysis it appears 'doubtful' that it has the powers to impose a RAB approach.

5.170 The underlying problem is that Ofcom is using an SMP Condition that is designed to prevent anti-competitive behaviour to create cross-subsidy.

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[125] Answer to clarification regarding power to set a price floor

Our power to set a price control as a SMP condition derives from section 87(9) of the Communications Act 2003, and is subject to section 88.

Section 88(1)(a) provides that we may only set such a condition where (among other things) it appears to us that there is a relevant risk of adverse effects arising from price distortion.

Section 88(3) provides that there is such a relevant risk if the dominant provider might (a) fix and maintain some or all of his prices at an excessively high level, or (b) impose a price squeeze, so as to have adverse consequences for end-users of public electronic communications services.

To exercise our power to impose a price control as a SMP condition, we would therefore need to be satisfied that the floor is necessary to address one of these risks.

[126] As we explain above at §5.93 we consider that a price control is permitted if it addresses other risks e.g. predatory pricing

5.5.4.7 *Other detrimental impact on consumers*

5.171 Aside from the harms set out above from introducing a RAB system, there are a number of other harms that Ofcom should consider.

- The proposed RAB approach means that wholesale MPF/FTTC prices will be set above the competitive level. Given only some firms[127] – such as Sky, Vodafone, and TalkTalk – face these higher costs they will not be fully passed through to the retail level and so retail competition will be distorted and weakened.
- Ofcom's proposals will result in MPF/FTTC customers in Area 3 subsiding build of Openreach's FTTP network, which will aggravate the digital divide. MPF/FTTC customers are more likely to be vulnerable, for example elderly and low-income consumers are over-represented in voice-only or standard broadband customers. Ofcom has not provided any detail on its reasoning around the equality impact of its proposals (see section 9 below). Furthermore, many customers who will pay inflated MPF/FTTC prices will have no FTTP available to them during this control period, and no prospect of FTTP becoming available for many years.
- It is doubtful that a RAB approach will be sustainable into the future, creating regulatory uncertainty. Ofcom's proposed approach works best when there is limited FTTP investment, which has relatively low losses and a large base of MPF/FTTC customers who can provide a subsidy. Over time as more FTTP investment is made and the number of MPF/FTTC customers declines, the subsidy will become a decreasing portion of the loss.
- Ofcom's approach will amplify Openreach's incentive to make more areas appear unviable so that they are assigned to Area 3 and Openreach can gain subsidy for them and be protected from competition, particularly through hindering PIA to deter competitive build.
- Openreach will be able to game and distort information for its benefit in this and future reviews. For instance, it will have incentives to understate revenues and in exaggerate costs by attributing shared costs to Area 3. This will be particularly easy since FTTP is not a price regulated product at present, and therefore does not have the stringent cost allocation rules applied to it in the same way as for regulated products.

5.5.5 *Ofcom's proposals for RAB design*

5.172 We discuss below two aspects of the proposed design. First the relative merits of the 'forecast' approach and the 'ex-post' approach and second some of the assumptions Ofcom has used.

5.5.5.1 *Forecast versus ex-post approach*

5.173 Ofcom has outlined two options for its RAB approach. A forecast approach where Openreach commit to an amount of future build and the k-factor is set in advance based on

[127] Virgin does not face higher wholesale costs and neither do BT's retail brands (since the wholesale rate is an internal transfer charge)

this. The alternative is an ex-post approach where a k-factor is set based on the actual build that is delivered. We discuss here their relative advantages and disadvantages. However, it must be emphasised that neither of these approaches will address the inevitable and fundamental problems and harm inherent in the RAB approach.

Table 5.5: Relative disadvantages of forecast and ex-post approaches

Forecast	Ex-post
• Absent a penalty mechanism if Openreach does not reach target build and effective enforcement of it (which seems likely[128]) Openreach will under-build and over-recover • Revenue and cost projections will be more inaccurate increasing risk and cost of capital[129] • Higher risk of gaming, over-recovery and underinvestment due to higher revenue/cost variance between Ofcom estimates and actual cost levels • Ofcom need to invest more effort to properly understand and audit Openreach assumptions. Unlikely that with 8 months before statement this is possible • Level of Openreach roll-out will be less since: Openreach will be conservative when making initial commitment; and, if actual market conditions allow more roll-out Openreach won't increase roll-out since will not be compensated	• Prices less predictable • Possibly more onerous – whilst more ongoing intervention less effort required initially. However, whether onerous second order consideration • Weaker cost minimisation incentives since charges based on actual build cost

5.174 Both approaches have relative advantages/disadvantages. Our view is given the large degree of uncertainty at this point and lack of time for Ofcom to consult on and review Openreach's plans for a forecast approach that an ex-post approach is preferable. Though as we highlight above neither approach is in consumers interests.

5.175 If Ofcom were to pursue a RAB approach then there are a number of options around the design and approach to implementation that need to be decided upon. All of these will be required for a forecast approach and some will be required for an ex-post approach.

- Openreach provide Ofcom detailed construction engineering plans so as to avoid regulatory gaming through inflation of costs, and to provide Ofcom with a method to determine whether the costs reflect an efficient approach;

[128] At the moment Ofcom has not suggested that there will be any penalty for Openreach not reaching the target. In any case, even if Openreach did not meet the target Ofcom may be reticent to enforce the target through punishment, since doing so may reflect poorly on Ofcom.

[129] Under forecast approach all costs and revenues will be projections whereas under ex-post approach build costs will be based on actuals whereas operating costs and revenues will be projections.

- Openreach should be required to avoid areas where altnet have built networks already, or announced plans to build networks, to prevent subsidised overbuild;
- Ofcom needs to develop its understanding of FTTP revenues and costs so that it can make robust forecasts, avoid being gamed by Openreach and ensure that it can identify efficient cost levels and avoid gold-plating. Data should be published so that stakeholders can comment on it;[130]
- Openreach would have to report on actual roll-out, revenues and costs including a comparison to initial forecasts;
- For the forecast method, Ofcom would need to decide what would happen in the case that Openreach does not meet its commitments. For instance, how the k-factor would be reduced and clawed back and any penalty imposed on Openreach;

5.176 If Ofcom decides to implement a RAB model with a forecast approach, then the current consultation (which focuses on the post-build approach) is insufficient for Ofcom to discharge its duty to consult on its proposals. It should therefore reconsult on its Area 3 proposals in full.

5.5.5.2 *Assumptions used in RAB model*

5.177 There are a number of assumptions used in the RAB model that we disagree with on.

5.178 Ofcom proposes using a pre-tax real WACC of 5.9%. This implies that Ofcom believes the cost of capital for Openreach's Area 3 FTTP investment is equally as risky as the BT "Other UK Telecoms" business despite. Ofcom should assume a WACC which is the same or below Openreach's copper WACC across the UK since the risk for Openreach is similar offering FTTP as a monopoly as in offering copper as a monopoly. There are reasons that the risk is lower: guaranteed returns which are offered by the RAB model; subsidy reduces threat from competition. It is interesting that Ofcom does not appear to have taken into account what is generally acknowledged to be the most important benefit of a RAB model – that it lowers risk and therefore required returns.

5.179 Ofcom appears to assume zero increase in household numbers over the charge control. This is inconsistent with ONS projections which assume a 4.2% increase in households over the period.[131]

5.5.6 *Alternative regulatory approach in Area 3*

5.180 We describe above how and why Ofcom's RAB approach in Area 3 would be harmful to consumers in Area 3 and also elsewhere in the UK. We discuss below what regulation would be most effective to deliver Ofcom's stated objectives of encouraging Openreach FTTP investment in Area 3 while protecting consumers interests, as well as the need to encourage

[130] This should not breach commercial sensitivity or otherwise lead to competition problems as Area 3 is, if well-defined, not subject to competition.

[131] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/2016basedhouseholdprojectionsinengland/2016basedhouseholdprojectionsinengland

altnet investment in Area 3 and take account of impacts outside Area 3. We first address the central question of whether a subsidy scheme is appropriate at this stage and then what suitable regulation would look like.

5.181 Whilst the RAB is clearly harmful, we also consider that more generally it is premature to impose a subsidy scheme in April 2021. This is for two key reasons.

5.182 First, it is difficult to develop any effective scheme at this stage whilst:

- supply constraints mean most investment that is stimulated in Area 3 will displace investment from Area 2;
- at this nascent stage there will be high uncertainty of both revenues and costs inevitably leading to over-recovery or underinvestment;
- Ofcom is limited in its powers to impose an SMP Condition that creates a cross-subsidy; and,
- it is difficult to identify areas where altnet investment is likely

5.183 Second, further time is needed to design a subsidy scheme that avoids the most harmful effects of the RAB approach. For instance, to:

- ensure that subsidy does not deter altnet FTTP investment (which can encourage Openreach FTTP investment) which undermines the Government subsidy scheme. This could be done by either: allowing altnets to bid for subsidy; or, not permitting any subsidy in areas where an altnet has a funded plan to build FTTP within, say, the next 3 years;
- ensure that any burden is spread widely by, for instance, spreading across Area 2 customers;[132]
- consider how Openreach excess profits in Area 2 could be used to subsidise losses on FTTP investment in Area (or Openreach could be required to use these excess profits);
- design a claw-back mechanism in the case where profits on investments are higher than expected.

5.184 Therefore, we consider that Ofcom should aim to with Government design and implement a subsidy scheme by the end of 2022 that can be overlaid on top of other regulation.

5.185 We consider that for April 2021 the appropriate regulation is adaptive regulation (with prices, in the case where there is no altnet entry, based on Openreach costs excluding HON adjustment). This has a number of benefits:

- setting lower prices increases the incentive on Openreach to build FTTP;

[132] The general theory of the second best implies that economic distortions will generally be minimised when there is a constant uplift on marginal costs across all products. See Lipsey, R. G.; Lancaster, Kelvin (1956). "The General Theory of Second Best". *Review of Economic Studies*. **24** (1): 11–32

- it does not deter altnet investment, but rather encourages investment since it allows higher wholesale MPF/FTTC prices if entry occurs. The threat of altnet entry will increase Openreach's incentive to build;
- it provides consistency across Area 2 and Area 3, thereby avoiding the risk of regulation distorting the market – if Area 2 and Area 3 have significantly different regulation then decisions on where the boundary is drawn will distort investment. This also results in simpler regulation and is less onerous.

5.186 Non-discrimination obligations and a prohibition of geographic discounts should also apply in Area 3 (as they do in Area 2) since there is no cost to doing so and it will prevent predation[133].

5.5.7 *Glidepath*

5.187 If Ofcom implements the RAB approach (under an ex-post approach) it proposes to use a glidepath to set the MPF/FTTC charges in each year (V4 §3.24).

5.188 Current MPF/FTTC prices are above current and future costs (V4 §3.24) and this has arisen due to changes in policy changes relating to charge controlling higher bandwidths and exclusion of HON adjustment (V4 §3.23). Ofcom would normally in these circumstances impose a starting charge adjustment to reduce prices to cost since the misalignment between price and cost has arisen due to a change in policy and not due to efficiency or volume effects[134]. However, in this case Ofcom proposes to use a glidepath since the future price will include a (k-factor) uplift for losses on FTTP investment and if an SCA was imposed it would, according to Ofcom, result in prices reducing and then increasing. Ofcom's approach is flawed for a number of reasons.

5.189 We understand that Ofcom's approach is to glide from the current price to the future cost plus k-factor. This is infeasible since under the ex-post approach Ofcom does not know the size of the k-factor since it is set after Openreach makes investment in Area 3[135]. Therefore Ofcom cannot know what price it is gliding towards making it impossible to set a glidepath.

5.190 Further and in any case, the reasons Ofcom gives for not imposing an SCA are wrong (V4 §3.28).

5.191 First Ofcom asserts that: "… *there is a risk that initial wholesale price reductions may not be passed through to retail customers (and retained as increased margin by retail providers).*

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[133] Ofcom proposes no non-discrimination obligation – see §A15.47

[134] Ofcom uses a glidepath in some cases in order to maintain cost minimisation incentives. However, where a misalignment between prices and costs is due to a change in policy (such as excluding the HON adjustment as is proposed here) then Ofcom imposes a starting charge adjustment (SCA). This is clear from BCMR16 Volume 2 §7.3: "*Stage 4 - considering the case for one-off adjustments to charges at the start of the charge control, i.e. a starting charge adjustment (SCA), including whether to: adopt SCAs based on concerns regarding distorted pricing signals; and, adopt SCAs on the basis that BT's charges are likely to be significantly above cost for reasons other than efficiency or volume growth.*" A change in cost recovery policy is clearly a reason "*other than efficiency or volume growth".*

[135] Ofcom appears to be proposing a glidepath when an ex-post approach is used since it refers in V4 §3.25 to "*post-build variant of a RAB charge control*" which presumably means ex-post.

Therefore, retail customers could be worse off overall since the higher future wholesale charges (that will not be transitory) will be passed on" (V4 §3.28). This makes no sense for a number of reasons:

- Ofcom accepts that there is pass through of wholesale prices to retail prices (indeed Ofcom's CPI+0% approach is premised on this assumption). There is no economic reason as to why a temporary or transitory reduction would not be passed through whereas a longer term reduction would, and Ofcom provides no explanation for its assertion;
- In no sense could customers be "*worse off*" if an SCA was imposed versus the counterfactual of a glidepath. Rather consumers will be better off under an SCA: retail prices at the end of the period will be the same, but in earlier years they will be lower.

5.192 Second, Ofcom claims that "*Stable prices are supportive of dynamic efficiency* [i.e. investment]" and "*discontinuities in charges over time and lead to a more stable and predictable background".* Here Ofcom misunderstands investors' concerns. What is important to investors is cost predictability – it matters little whether costs go up or down providing they change in a predictable manner (see §5.56) and allow investors to recover their costs (including the cost of capital). Therefore, whether Ofcom adopts an SCA or glidepath makes no difference to the predictability of wholesale prices once that decision is made, and therefore makes no difference to investment incentives. If Ofcom is assuming that investors (particularly Openreach) are less able to model prices that fall and then rise (in a predictable way) than prices that are flat (or 'stable') then Ofcom is being rather naïve. Any simple investment model will be able to take such a predictable variation in input prices into account.

5.193 Third, Ofcom claims that the higher prices resulting from a glidepath will encourage altnet FTTP investment in Area 3. This is rather an absurd claim:

- under the RAB model very little altnet FTTP investment will occur since altnets cannot compete effectively against a subsidised Openreach;
- this claim requires pass through from wholesale prices into retail prices which appears inconsistent with Ofcom's claim (V4 §3.28) that there will be no pass through from retail to wholesale pricing[136]
- lastly, any effect on altnet FTTP investment from higher MPF/FTTP prices would be trivially small – even in Area 2 when 10m homes are expected to be passed, just 1% of wholesale price rises flow through into added FTTP revenues for altnets. Here it would be far less given the smaller scale of altnet build.

5.194 It is remarkable that Ofcom highlights the tiny possible benefit of a glidepath on altnet investment in Area 3 at the same wholly ignoring the significant impact that a subsidy of Openreach FTTP will have on deterring altnet investment.

[136] At V4 §3.28 bullet 1 Ofcom argues that wholesale price reductions will not flow through to reduced retail prices but in V4 §3.28 bullet 4 they also argue that higher wholesale prices will lead to more investment (which requires that higher wholesale prices feed through into higher retail prices)

5.195 Whilst there are no meaningful benefits to imposing a glidepath (instead of an SCA) it does result in significant harm:

- It will result in materially higher MPF/FTTC wholesale prices and retail prices. The exact amount of this will depend upon the scale of the starting charge adjustment, but even if this is just for the removal of the HON adjustment, it would be likely to be above £100m. [137]
- Setting wholesale MPF/FTTC prices above the competitive level will weaken retail competition
- Higher MPF/FTTC wholesale prices will reduce Openreach's incentive to invest in FTTP (which Ofcom agree with) – see section 5.2.2 above
- Departing (without good reason) from Ofcom's policy on use of a SCA will reduce regulatory certainty, increasing risk and deterring investment

5.196 We note that if Ofcom used a forecast approach (where a glidepath could be calculated since the end of period k-factor uplift will be known) then it is still inappropriate to use a glidepath.

5.6 WLA – area 1 pricing

5.197 Ofcom has not considered remedies in Area 1, on the basis that its analysis finds that there are no parts of the UK which should be considered to be Area 1. We think that on a proper analysis there will be some areas assigned to Area 1, in which case remedies in this Area will need to be addressed. In any case, even if there were no areas assigned to Area 1 it would be useful for Ofcom to outline its view on the appropriate remedies.

5.198 In TalkTalk's view, even if the average conditions of competition across Area 1 suggest there is no SMP, there are three requirements for regulation in Area 1:

- transitional price regulation to allow time for CPs to either enter into alternative contractual agreements with Openreach, or to migrate their customers onto other networks;
- regulation which prevents Ofcom from exploiting any remaining pockets of market power in localities where altnets have not rolled out their networks; and,
- regulation which prevents Openreach from engaging in exclusionary behaviour against entrant networks.

5.199 Transitional regulation will have two aims: to encourage ISPs to migrate quickly to other networks or secure a wholesale arrangement with Openreach but protecting from Openreach exploiting customers on its network in the interim. We consider that the following regulation would be appropriate to meet these aims:

[137] The exact size of the HON adjustment is unclear given the change in geographic market definition, and therefore the costs of both the actual network and a hypothetical ongoing network will change. However, assuming that policy adjustments were £10 of the c£20 difference between starting price and starting cost then the appropriate SCA would be £175m (= £10 x 5 years / 2 x 7m lines)

- the period of transition should be no longer than would be required for an efficient CP to migrate its entire base off the Openreach network and onto an alternative network. The length of time which this takes will reflect the market share of the largest operator on the Openreach network (in most cases, Sky), and the capacity of alternative FTTP providers to connect customers (Ofcom can request this data from providers).
- During the transition period prices should be regulated at or above the REO level of costs, with some form of quality regulation maintained.
- price caps should only be applied for existing customers, and not new customers, who are not locked to the Openreach network by switching costs.
- Other non-price regulation elements (non-discrimination, price publication, equivalence of inputs) should continue to apply throughout the transitional period, but be removed at the end of the transitional period.

5.200 In order to prevent exclusionary behaviour a uniform price obligation (or prohibition on geographic discounts) should be imposed (as is proposed within Area 2). This will prevent Openreach behaving anti-competitively by raising prices above the competitive level in parts of Area 1 where there is not effective competition. As is proposed for Area 2, Openreach should be able to apply to Ofcom for this restriction to be removed following consultation.

5.201 It is also important to note that– even if Ofcom chooses not to carry out a full assessment of adaptive regulation, which would likely lead to it being adopted as considerably more efficient and appropriate than Ofcom's proposals– there is an argument that Ofcom should conduct reassessments within the regulatory period to reflect the elimination of Openreach's enduring SMP in particular areas which have seen roll out of altnet FTTP, and therefore a locality moving to area 1. It may be inappropriate for Openreach to be regulated for an extended period of time- potentially as long as three or four years—after it no longer holds SMP in a locality.

6 WLA – other remedy issues

6.1 In this section we comment on other remedy issues, namely:

- Fair bet principle
- FTTP price premium
- Copper retirement
- Non-price remedies
- Quality of service

6.1 Fair bet principle

6.2 Ofcom sets out its considerations around the so called 'fair bet' principle at V4 §§1.86-1.89 of its consultation. As set out in previous TalkTalk submissions to Ofcom, TalkTalk supports applying the fair bet principle to certain investments since it allows firms to engage in risky investment in the presence of regulation. TalkTalk agrees that, due to the risk inherent in new investment, it is important that returns on significant and risky investments are not immediately regulated once they become profitable so that their lifetime returns cannot exceed the cost of capital. Without allowing a fair bet, efficient investments that benefit consumers might not be made.

6.3 In considering how the fair bet might in time apply to FTTP investment it is important to recognise that demand risk is reduced by Ofcom's proposals around copper switch-off. In particular, as a result of Ofcom's copper switchover proposals Openreach will be able to switch off the copper/ FTTC network a few years after FTTP investment in each area. As such, the level of demand uncertainty facing Openreach's FTTP investment is reduced since it can effectively 'force' demand from its FTTC network onto the FTTP network if it will maximise its profits by doing so. The only real demand uncertainty will be in areas where Openreach either overbuilds another FTTP network, or is overbuilt by altnet FTTP. However, due to the commercial incentives on investors this is unlikely to occur in many areas (see section 3.1). Furthermore, where Openreach overbuilds altnet FTTP, whether Ofcom imposes price caps is likely to be of limited relevance, since competition will act as a constraint on Openreach's pricing.

6.4 We consider that the current limited regulation on FTTP is consistent with the fair bet principle it since should do little, if anything, to prevent Openreach from earning supernormal returns on its FTTP investments. The only regulation which is proposed on FTTP products is on the FTTP 40/10 variant, allowing Openreach to earn greater returns on higher speed products, This is unlikely to materially constrain FTTP margins for a number of reasons: this regulation is only imposed when there is no regulated FTTC product available, meaning that Openreach has the ability to choose when FTTP regulation commences in each area; the price is materially higher than for the equivalent FTTC product (reflecting Ofcom's estimate of its increased benefits); and, over time the majority of demand will be for the higher speed FTTP products.

6.5 The fair bet principle should also apply to altnet FTTP investment, since in time altnets may gain SMP in some localities and it may therefore be appropriate to impose a charge control

on their products. However, the way the fair bet principle is applied will need to reflect the greater risk for altnet FTTP investors than for Openreach – which implies allowing returns above those which Openreach should properly be permitted before regulation is imposed. For instance altnets: do not have the same ability to control the level of competition to the FTTP network; do not have the commercial links with all major downstream players in the market; and, are exposed to predatory behaviour from Openreach.

6.2 FTTP 40/10 price premium

6.6 In cases where FTTP40/10 prices are regulated (since MPF/FTTC price regulation has been or will soon be removed) Ofcom proposes to set the price cap on FTTP40/10 as the FTTC40/10 price in Area 2 plus a price premium. Ofcom sets out its approach to the estimation of the price premium on the FTTP 40/10 product, compared to the FTTC 40/10 product, at Annex 22 of its consultation. This premium applies in the case where FTTP is available and the charge control on FTTC is withdrawn. We discuss below Ofcom's proposals for the premium which are set out in Annex 22.

6.7 Ofcom estimates a premium of £1.50-£1.85 per line per month for FTTP, based on:

- increased consumer willingness to pay for FTTP rather than FTTC, due to the higher average speed of the FTTP 40/10 product than of FTTC 40/10, as the FTTC 40/10 product for many customers delivers speeds below the headline level (£1.10); and,
- cost to serve savings from the lower engineering and repair costs resulting from increased reliability, and lower exchange costs from needing to be present in fewer exchanges (£0.40 - £0.75).

6.2.1 *Consumer willingness to pay*

6.8 The estimated increase in consumer willingness to pay is set out at §§A22.4-A22.10. Ofcom's conclusion is that:

> *We think an average differential of £1.10 is reasonable to allow for the higher speeds that 40/10 FTTP would deliver as compared to 40/10 FTTC products.*

6.9 The evidence base for this is opaque at best. Ofcom has said that:

> *We note that this figure would be broadly consistent with 22% of customers getting actual speeds around or below ADSL2+ speeds (25Mbit/s) valuing a full 40/10 FTTP speed at £5 more. These customers comprise of:*
>
> *• 20% of 36Mbit/s FTTC lines having a minimum speed around or below the headline ADSL2+ speeds (25Mbit/s).*
>
> *• 2% of premises to which FTTC services are not available.*

6.10 We presume from this that Ofcom is assuming that the 22% of customers who currently receive a speed less than 25Mbps on FTTC 40/10 will be prepared to pay on average £5 more for an FTTP 40/10 service than for their current service.

6.11 The 22% figure appears to be based on Ofcom data, whereas the £5 figure is based on the typical price difference between ADSL products and FTTC 40/10 products (annex 22 footnote 434).

6.12 Retail price differences say little about willingness to pay. They reflect underlying cost differences (which are themselves likely to be in the region of £5 per month), the degree of competition in the retail market (which governs pass-through of costs into prices) and consumers' willingness to pay. For example, if a market was fully competitive then there would be 100% pass-through of costs into prices, and consumers' willingness to pay would not enter into profit-maximising retail prices at all. This is even more so in instances such as the current one, where Ofcom is trying to infer the willingness to pay for a product of customers who do not consume that product, or a similar one, at present. Ofcom's data is irrelevant to the problem which Ofcom is considering.

6.13 Given the weakness in Ofcom's pricing evidence as an indicator of willingness to pay, Ofcom could conduct a simple conjoint analysis which would provide an indicative estimate of the current level of premium these customers would be willing to pay. As demand for bandwidth increases the premium is likely to increase. This survey should be focussed on the areas and customers where this premium will apply i.e. in areas where Openreach is likely to roll-out FTTP (and so MPF/FTTC regulation withdrawn) and customers who receive under 25Mbps. It is important that the level of Virgin coverage in the survey sample reflects the level of Virgin coverage in Openreach FTTP areas since the willingness of MPF customers to pay for higher speeds is likely to be lower in areas where Virgin is available.

6.14 Ofcom's approach implicitly assumes that customers who get over 25Mbps are not willing to pay anything additional for FTTP40/10 over FTTC40/10. We consider that Ofcom's estimate of the price premium could be improved by estimating the amount that these customers might on average be willing to pay. Evidence could be drawn from the conjoint analysis to inform this.

6.15 In addition, Ofcom states that it has not taken into account any consumer benefits from increased speed consistency (over time) and reliability of the FTTP product (§A22.11). This is a fundamental omission. Ofcom could estimate the value of reliability based on the level of faults and the auto-compensation payment which is designed to compensate customers for delayed fault repair. This would provide an estimate along the following lines (Ofcom will be able to improve on the input assumptions):

- 9% of MPF/ FTTC lines per year experience a fault
- The average time taken to repair a fault is 2 days
- Compensation per day is £8
- The cost per year to consumers of MPF/FTTC faults £1.44 (= 9% x 2 days x £8)
- Reduction in faults on FTTP: 70%
- Benefit to consumers of lower faults £1.01 (= £1.44 x 70%) per year, or around £0.08 per month.

6.2.2 *Cost to serve savings*

6.16 Ofcom says it has estimated savings from lower engineering/repair costs and exchange-based costs of £0.40 - £0.75. Yet it has provided no evidence for this figure. This is unacceptable since it is impossible for stakeholders to comment on its accuracy or otherwise. Whilst we recognise that confidentiality will limit what can be published it is possible for Ofcom to, at a minimum explain its underlying approach and assumptions. Our comments below reflect the limited explanation Ofcom has provided to date.

6.17 TalkTalk agrees that there will be meaningful cost to serve savings from using FTTP 40/10 rather than FTTC 40/10, particularly in engineering and repair costs.

6.18 On the other hand, it is much less clear that there will be significantly lower exchange-based costs, as many of these costs are shared costs between offering broadband services and leased line services. [✂].

6.19 Ofcom should therefore take account of this factor, and include cost savings where there are lower incremental costs as a result of not using MPF/FTTC, unless it finds that there are no leased line customers served from that exchange..

6.2.3 *Treatment of G.fast*

6.20 Ofcom proposes to allow no charge uplift for G.fast 40/10 services above FTTC 40/10 (§A22.15-A22.18). We agree with this since G.fast will:

- not deliver a consistent speed;
- not provide customers with benefits through a more reliable service;
- not reduce repair related costs since reliability will not be improved; and,
- not result in reduced exchange costs.

6.21 Furthermore, since Ofcom is not aiming to promote G.fast services, which are not gigabit capable, the rationale to allow a premium is weak.

6.3 WLA - copper retirement

6.22 In this section we discuss Ofcom's copper retirement proposals and TalkTalk's suggestions for improvements to those proposals.

6.3.1 *Ofcom's objectives for adapting regulation to support copper retirement*

6.23 Ofcom's proposed intervention to accelerate copper retirement in order to encourage FTTP investment is unusual. Normally the migration to new networks and technologies (such as to FTTC) is left to market forces, with regulators intervening solely to protect consumers, reflecting that the majority of benefit from investments is accrued by Openreach and they control the decision of whether to invest. Ofcom's current proposals on copper retirement grant Openreach significant additional commercial advantage and strengthen its already

considerable market power as Ofcom itself highlights: "*our proposed copper switchover arrangements already give BT very powerful levers to achieve migration quickly*" (§A15.61b).

6.24 Therefore, whilst we agree that there will be some benefits from accelerating copper retirement, Ofcom must ensure that any regulation ensures that customers are protected from harm and that Openreach's customers (who bear significant costs from migration) do not face unreasonable burdens. If Openreach customers face unreasonable costs then it may result in consumers suffering worse service, or in extreme cases, being unable to access competitive products. In the case where the costs are so significant that they are unable to be borne by one or more CPs, or one or more CPs is unable to migrate customers for some operational reason, they risk a disorderly transition, with residential and business customers losing service from their current broadband provider.

6.25 Ofcom outlines four objectives (V3 §§2.3-2.6) for its proposed approach to regulation to support the retirement of Openreach copper:

- To promote Openreach FTTP investment by improving the returns on Openreach FTTP by incentivising the reduction of the period of dual running of the legacy copper (e.g. MPF/FTTC) and the new FTTP network;
- To protect customers from excessive prices and weakened retail competition;
- To protect customers from harm due to the removal of services relied upon by vulnerable customers or critical national infrastructure; and
- To deter Openreach from providing incomplete ultrafast network coverage due to actions designed to forestall competition from altnets (e.g. only targeting areas of exchanges where there is competition; or only rolling out to the extent necessary to deter altnet entry in an area).

6.26 Overall, while we broadly agree with Ofcom's objectives it must also recognise that it must not place unreasonable burdens on Openreach customers. Also, we consider that Ofcom's focus should be on maximising complete FTTP coverage, rather than simply 'ultrafast' deployment, for reasons discussed in more detail below.

6.27 It is important to recognise at the outset that by accelerating copper switchover beyond the speed which would be dictated by market forces, Ofcom is deliberately adopting a policy which will harm economic efficiency by reducing consumer surplus. Consumers who would prefer a lower price/ lower quality broadband product will lose the ability to access such a product more quickly than would be the case without regulatory intervention. Instead, they will have to pay more for an FTTP product that they may not perceive to provide them with any additional advantages. This will particularly be the case for customers who either take voice-only products, or have minimal internet usage and are therefore unconcerned about speed. Many such customers are likely to fall into vulnerable groups, particularly of elderly customers.

6.28 It may be that for some customers, FTTP broadband is a good experience, and that their preferences will change after being forced to take the new product, such that they prefer to pay more for FTTP than less for FTTC. However, without some evidence to support the hypothesis that this will be widespread, Ofcom cannot assume that this will generally be the case, or that its policy will result in an economically optimal speed of switchover. As with

many other areas of Ofcom's analysis, TalkTalk considers that Ofcom should undertake cost-benefit analysis to elucidate the gains and losses from the policy which it proposes.

6.29 We note that while Ofcom's overall strategy is to promote full fibre investment by a range of network providers, not just Openreach, its proposals to adapt regulation to support copper retirement focus on Openreach. The proposals relate to relaxing the regulation applied to Openreach's legacy network in areas where it has rolled out FTTP. However, it is important that Ofcom takes steps to ensure that the copper retirement measures are not anti-competitive in areas covered by both Openreach FTTP and altnet FTTP, particularly since switching away from or between FTTP networks is likely to be considerably lower than switching between services on legacy networks.[138] For example, the costs of ceasing a FTTC line to move to an altnet must not be prohibitive when compared with an internal migration from Openreach FTTC to Openreach FTTP; and notice periods should not be unduly long compared with the time required for an internal migration.

6.3.2 *Transition approach*

6.30 We support Ofcom's proposal (V3 §§2.3-2.4) to move the focus of regulation from MPF/FTTC to FTTP on an area-by-area basis as exchanges are upgraded, and to only reduce regulation on MPF/FTTC at premises where fibre is available within each exchange area.

6.31 The core proposal for regulation to meet Ofcom's objectives is the staged withdrawal of regulation on legacy wholesale products (e.g. MPF, FTTC) in order to allow Openreach to encourage CPs to transfer their customers to FTTP (e.g. by raising wholesale FTTC prices), thereby allowing Openreach to close the legacy network.

6.32 The proposed approach is laid out in the diagram below. The proposed regulations apply to premises where FTTP is available. Where FTTP is not available then regulations on MPF/FTTC remain unchanged (i.e. as in stage 1). The triggers apply on an exchange-by-exchange basis.

Fig 6.1: Summary of Ofcom's proposed changes to access and charge control obligations

Stage	Trigger (coverage level)	Access obligations	Provide new lines	Charge control on MPF/FTTC 40/10	Charge control on FTTP 40/10
1	< 75%	Yes	Yes	Yes	Yes
2	75% coverage	Yes	No	Yes	Yes
3	'complete'	Yes	No	No	Yes

6.33 Ofcom proposes that the second stage is triggered when Openreach has achieved 75% FTTP/G.fast coverage in an exchange. At this stage, regulation will change to support Openreach's plans to 'stop sell' new MPF/FTTC services: it will no longer be required to provide MPF/FTTC services for new connections, home moves, switches between providers,

[138] Much switching between legacy networks is driven by quality of service problems on the existing network, problems which are much less likely to occur on FTTP networks.

or changes to bandwidth, where FTTP is available. However, in stage 2 access requirements, general remedies and quality of service obligations will continue to apply to existing MPF/FTTC services where customers are not making any changes to their service. During stage 2, charge controls will apply in parallel to MPF, FTTC 40/10 and FTTP 40/10, with a small premium on FTTP 40/10 over the price of FTTC 40/10 – see section 6.2.

6.34 The third stage is reached, under Ofcom's proposals, following the 'completion' of FTTP/G.fast coverage in an exchange area, and after a minimum of two years after 75% ultrafast coverage is reached. From this point, Ofcom proposes to remove the charge control on MPF and FTTC 40/10 at premises where FTTP is available.

6.35 TalkTalk agrees with the overall proposal to take a two-stage approach to the reduction of regulatory requirements on MPF and FTTC 40/10. However, we consider that some aspects of the design require further consideration as set out below.

6.3.3 *General and specific access obligations*

6.36 TalkTalk supports Ofcom's proposal that general and specific access obligations will continue to apply to existing MPF/FTTC services throughout market review period (V3 §2.21). We note that Ofcom expects Openreach to honour its voluntary commitment to provide new WLR and ISDN services until December 2023 and to maintain existing services until December 2025 on fair and reasonable terms, and to align the stop sell on these services with MPF and FTTC. Ofcom proposes to remove Openreach's obligation to develop new forms of access on copper services, except to enable the migration (V3 §2.22).

6.37 In the absence of a commitment to reach 100% FTTP, Openreach should be required to maintain services for those premises that have no other options. Rather than removing Openreach's obligation to develop new forms of access on copper services, it would therefore be appropriate for change requests for copper products and services to continue to be reviewed through the established Statement of Requirements (SOR) process. This would enable changes that will benefit customers to be implemented, especially if they are relatively small and easy to implement. Changes that would require disproportionate effort and/or cost would, by their nature, not be progressed – see §6.86.

6.3.4 *Use of G.fast coverage in meeting coverage threshold*

6.38 Ofcom proposes that the 75% and complete coverage thresholds are based on the percentage of premises covered using G.fast (where it can provide a line speed of 300Mbps download) as well as FTTP. The inclusion of G.fast when assessing coverage thresholds is inappropriate and misconceived for many reasons:

- First, it is contrary to Ofcom's objective to incentivise FTTP build because it clearly weakens the incentive to build FTTP. Phasing out the regulation of copper services at FTTP premises within an exchange area, while an undefined proportion of premises are only covered by G.fast, is not consistent with maximising FTTP roll-out. It could lead to incomplete and patchy coverage of FTTP by Openreach, as an incentive to build G.fast will remain in some cases, particularly where FTTP roll-out is costly.

- Second, G.fast is significantly inferior to FTTP. It has lower maximum bandwidth capability; lower reliability due to noise-susceptibility; has a higher in life fault rate; and involves the continued use of D-side copper with its associated problems with water ingress. In contrast, FTTP delivers gigabit-plus capability and is more future-proof as technological advancements across the asset lifetime will lead to multi-gigabit service availability. G.fast only offers 120-300Mbps download speeds to the subset of homes located within 300m of their cabinet, so a small proportion of G.fast lines would meet the 300Mbps download criterion to be counted within the coverage threshold in any case. The inclusion of a subset of G.fast lines in the coverage threshold unnecessarily complicates the assessment of coverage, raises uncertainty and the potential for gaming, and increases the administrative burden of the policy.
- Third, the inclusion of G.Fast appears to be out of step with Openreach's current 'Fibre First' approach to roll-out, which seeks to prioritise the deployment of FTTP over G.fast to deliver ultrafast speeds. Openreach had paused announcing new G.fast locations prior to COVID-19 and we expect it to downgrade its original target of 10m premises to c.3m. Overall, we expect G.fast to cover a maximum of 10% of premises across the UK. Customers who only have access to G.fast are likely to have less competition for their contracts and consequently experience higher costs and lower quality of service than customers with FTTP available. This will occur as many ISPs may choose not to offer G.fast products, as it will be an inferior niche product. As such, the additional complexity from offering G.fast may not be commercially viable.
- Fourth, including G.fast 'ultrafast' connections is inconsistent with the Government's ambition to achieve 100% 'gigabit-capable' networks across the UK. G.fast, as deployed in the UK, is not gigabit capable.
- Fifth, Ofcom has not recognised that including G.fast in the coverage threshold will be likely to have an adverse effect on the incentive to complete FTTP coverage in an area or provided any adequate justification for it. In response to a request for clarification of the approach, Ofcom said that G.fast was included because it can provide ultrafast connections and because some G.fast has already been built. It said that "*excluding ultrafast G.fast services from 'complete' could result in those services being overbuilt, which would not support regulatory certainty and stability*"[139]. We disagree with this view and consider that overbuilding G.fast with FTTP should be encouraged to future-proof the network:
  - It is simply irrelevant whether G.fast can offer ultrafast connections in a handful of cases. As noted above, the Government's policy, which Ofcom is seeking to implement through the WFTMR, is for gigabit capable broadband. G.fast is not gigabit capable as deployed in the UK.
  - Ofcom has not even published estimates of the proportion of homes receiving G.fast which can obtain 300 Mbps. If it wishes to claim that G.fast can provide a meaningful proportion of ultrafast connections, Ofcom should provide evidence supporting this claim.

[139] Ofcom update – 1 May 2020: https://www.ofcom.org.uk/consultations-and-statements/category-1/2021-26-wholesale-fixed-telecoms-market-review

- allowing G.fast to be overbuilt will have no impact on regulatory certainty and stability. G.fast has not been a product subject to price regulation, and Ofcom has taken no decisions which have actively encouraged its roll-out.

6.39 We require more certainty from Openreach over the planned use of G.fast where FTTP is not deployed. Our view is that G.fast use should be kept to a minimum – and ideally there should be no G.fast use – and regulation should further this aim. The development of G.fast has been challenging for CPs: we have invested significantly in G.fast but as Openreach has moved its focus on FTTP, we face wasted investment and additional operational complexity for little benefit.

6.40 For the reasons set out above, we do not consider that G.fast should be included in coverage thresholds that trigger changes in regulation. In other words, the first and second trigger thresholds should be based solely on FTTP coverage. This will ensure Openreach is incentivised to maximise FTTP build to the greatest extent possible.

6.3.5 *Additional criteria to trigger changes in regulation*

6.41 In addition to Ofcom requiring Openreach to meet 75% and complete coverage targets in order to trigger changes to regulation, we consider that Openreach must also have demonstrated that it has delivered an agreed set of pre-requisites to protect consumers and support CPs in managing efficient migrations. The pre-requisites may include:

- the full suite of products required to support CPs in migrating their customers to like-for-like services: these must include the appropriate care levels for vulnerable and business customers, for example;
- 'Best Practice' for vulnerable customers and edge cases, including CNI, and agreement on Openreach's voluntary commitments on pricing approaches to these customers that will apply to provide a buffer when the charge controls are removed on copper services;
- a cross-industry communications strategy for the relevant exchanges;
- a process for applying learning from the trials to other exchange areas and modifying products, processes and 'best practice' accordingly; and
- an agreed approach to any premises that are exempted from the coverage thresholds and managing the risk of orphaned customers.

6.42 We suggest the OTA could be given responsibility for reporting to Ofcom on progress against these measures and assessing if these pre-requisites have been met before changes in regulation are triggered when Openreach reaches 75% and complete coverage in an exchange area.

6.3.6 *Length of transition period*

6.43 As noted above, Ofcom proposes the transition from stage 2 to stage 3 should take the longer of two years from the point when 75% ultrafast coverage is reached in an exchange area and when coverage is complete – after this point no charge control will apply to MPF/FTTC products where FTTP is available. Ofcom bases its two-year proposal on the fact

that two years is the maximum consumer contract length. It states that communications providers will therefore have sufficient opportunity to engage with their customers on the migration to fibre within the transition period.

6.44 We think that a longer transition period is needed to support a customer-led migration process where CPs are able move their customers onto the new network voluntarily and minimise the proportion of forced migrations. We do not consider that two years is a long enough period to move all customers given the likely constraints on the speed of migration, including customer inertia and resistance to the in-home work required to support the upgrade. The lack of incentives to migrate, even at the point of contract renewal, for many standard broadband customers with limited bandwidth demands and for landline-only customers, needs to be considered.

6.45 Several further factors weigh against only allowing two years for the minimum transition period:

- business customers often have contract lengths longer than two years: MPF/FTTC based broadband products are frequently used in large-scale network deployments on multi-year wide-area network (WAN) contracts;
- potential Openreach constraints on the ability of CPs to migrate their customers within two years remain unresolved:
  - the full product set required to serve all types of customers is not yet defined and available, including SOTAP;
  - the different migration processes, including those for vulnerable customers, edge cases, and for managing the risks around 'orphaned' customers are still being designed;
  - the Openreach FTTP trial in Salisbury is not due to complete until December 2022. Until the trial is complete, Openreach and industry will not have had the opportunity to fully test and refine the migration products and processes, and CPs will not have had the opportunity to develop appropriate migration and communication strategies for different types of customers; and
  - [✂].

6.46 [✂].

6.47 TalkTalk understands the need to set regulation in a way that incentivises CPs to migrate customers to the new network but, given the above factors, we believe that Ofcom's proposal for a minimum two-year period is too short and is considerably shorter than the migration period under negotiation with Openreach. It could unfairly penalise CPs for problems in matters that Openreach controls or influences (e.g. product availability, migration process design, and commercial terms) that will affect the ability of CPs to migrate customers within this timeframe. A two-year timeframe also risks encouraging CPs to adopt practices contrary to Ofcom's migration principles, which could harm customers including the vulnerable, low income households and special use cases.[140]

[140] Ofcom, The Future of Fixed Telephone Services, 22 February 2019: https://www.ofcom.org.uk/__data/assets/pdf_file/0032/137966/future-fixed-telephone-services.pdf

6.48 Furthermore, Ofcom appears to consider that this means that all customers will have at least two years to migrate before no charge control applies. This is not correct: some customers will have much less time. The two examples below illustrate what may happen under a scenario where the 75% threshold is reached in January 2022 and 'complete' coverage is reached in July 2024:

- a customer who has FTTP made available in January 2024 (as they are in the last 25% of the area) will only have 6 months before MPF/FTTC charge controls are removed in July 2024; and
- a customer who has FTTP made available after July 2024 will immediately have MPF/FTTC charge controls removed (albeit that this will only be a small number of homes that were previously exempted due, for instance, to a 'no dig' order).

6.49 We therefore consider that it would be more appropriate to require a minimum of three years from the stop sell to the point at which the MPF/FTTC charge control is lifted at premises where FTTP is available following declaration of 'complete coverage' at an exchange. In addition, Ofcom should structure the regulatory change to allow a minimum of one year from the point at which FTTP is made available at each individual premises before the charge control on MPF/FTTC is lifted for that premises, as well as ensuring there is at least three years from the stop sell.

6.3.7 *Complete coverage*

6.50 We agree that completing coverage in an area should be a pre-requisite for the removal of the MPF/FTTC charge control at premises where FTTP is available after the minimum transition period has passed. As noted above, we believe only FTTP coverage, not G.fast coverage, should be counted when assessing whether this threshold has been met.

6.51 We agree that for premises to be counted within the coverage total, a service should be available to order subject to the normal service level agreements and quality of service standards. It should also be specified that premises counted within the coverage total should not be subject to any Excess Construction Charges.

6.52 100% FTTP coverage may not be fully achievable but the policy should ensure as far as possible that coverage is maximised. Some caveats are needed to reflect genuinely insurmountable barriers to connecting some premises to FTTP, but these must be strictly limited.

6.53 Ofcom proposes the following exemptions to complete coverage in an area:

- premises built after roll-out started in an exchange area;
- premises where 'all reasonable efforts' have been made to provide FTTP services but "*long-term restrictions to street or premises access, or other factors beyond Openreach's control (e.g. flooding, or a 'no-dig' order from the Local Authority that prevents any civil works from taking place within a specific area for several years*" (V3 §2.27).

6.54 We note that the latest forecast Openreach has provided for the Salisbury exchange area FTTP trial indicates that it expects to achieve only 96% FTTP coverage and expects to

upgrade the remaining 4% of premises to SOGEA. We have requested a full breakdown of the 4% of premises not expected to be covered with FTTP, and suggest scrutiny of this reasoning is necessary to inform thinking on allowable exemptions. The initial coverage forecast for Salisbury is disappointing, and we expect to engage with Openreach and industry to increase the number of premises covered. An improved product set, offering higher bandwidth options, will need to be developed for premises not served by FTTP to support customers and avoid exacerbating the digital divide.

6.55 We support Ofcom's proposal to engage with Openreach on the detail of any exemptions to ensure consistency and to allow early efforts to minimise the number of excluded premises. We expect that CPs should also be included in this process.

6.56 Ofcom intends to consult further on the list of exemptions that may apply when assessing coverage in an area, including how this would be reflected in the SMP conditions. We agree that further consultation is necessary to ensure transparency for all parties and ensure incentives to achieve as complete coverage as possible are aligned. Ofcom should also consider and consult upon how it assesses whether exemptions apply – for instance, in the first instance it may be for Openreach to decide whether a particular premise falls within a legitimate exemption but, if so, there must be a process where this can be checked since there is a clear incentive for Openreach to game the regulation.

6.57 We understand that Ofcom intends coverage calculations to take account of residential and business premises. This should be made explicit within the regulations to ensure all property types are covered by FTTP, where possible, and business premises are not excluded from roll-out.

6.3.8 *Transparency and monitoring*

6.58 Ofcom proposes to require Openreach to fulfil additional transparency requirements to ensure all parties are informed about when changes to regulation will take place. Ofcom intends to require Openreach to make public written announcements as follows:

- 12 months before it expects to reach the 75% coverage threshold – when planning is complete and it has assessed the necessary measures to reach 75%; and
- 12 months before it expects to complete coverage – typically following at least two years of build in an area and when it has assessed required steps to achieve complete coverage.

6.59 The date for moving to 'stage 3' must be at least 2 years after the start of the 'stop sell' in the exchange area and following complete coverage. Openreach should be required to be explicit about this expected date too when making its announcements for completeness, i.e. if it expects to complete coverage before 2 years has passed since the 'stop sell', it must also confirm the date of transition to stage 3 ('stop sell' date + two years) in the same announcement.

6.60 These announced dates would be the earliest points at which Openreach could make changes to prices and service availability in line with the regulatory changes discussed above. Openreach's general access obligations to provide 90 days' notice of any changes to prices or contract terms would remain. Regulation will only change following Openreach's

public announcements that 75% coverage threshold and complete coverage have been achieved.

6.61 We consider that there is a risk that Openreach prematurely announces that it will reach the 75% or complete coverage triggers since this will allow it maximum flexibility yet would result in stakeholders not having good forward visibility of when triggers will be reached. This could be overcome by requiring that a 12 month notice is only valid up to 15 months after it is issued and by requiring Openreach to provide notice (say) 3 months in advance as well as 12 months in advance.

6.3.9 *Exchange closure*

6.62 In addition to the transparency measures already in place by Openreach to announce the exchanges where it plans to start roll-out, and the additional measures proposed by Ofcom in this consultation, further measures are necessary to support the process of copper retirement. We propose that Openreach should also be required to announce projected dates for exchange closure to enable appropriate business planning and coordination by CPs. Migration to FTTP carries significant costs and risks for CPs, who also face the costs of providing legacy broadband network services, so greater certainty is needed over when CPs will be able to release cost savings from copper retirement and exchange rationalisation in order to make the business case for the migration to FTTP. A co-ordinated, transparent plan for exchange closure and appropriate transition arrangements (e.g. bulk processes) is required to ensure full alignment of incentives between Openreach and CPs to support the migration to FTTP.

6.63 In addition, there is a requirement for a new migration product so that when a customer ceases an MPF (or SOGEA) circuit there is no manual work done to cease the line (e.g. on the frame) and instead all the copper is removed in one effort when the exchange closes. This is likely to significantly reduce costs.

6.3.10 *The impact of Ofcom's proposals*

6.64 Ofcom notes various impacts of its proposals and we provide comments on each of them below.

6.3.10.1 *Customer disruption*

6.65 Voice customers will move to an IP voice service as they migrate from MPF/FTTC to FTTP. Ofcom suggests this will be "*straightforward for most customers*" (V3 §2.49) but some customers including those who are vulnerable and rely on care alarms, for example, may require additional support.

6.66 We note that, while we will strive to minimise disruption for all customers, in every case in-home work will be required to upgrade to FTTP and the move to IP voice will require customers to re-configure equipment in their home (i.e. the telephone will need to be plugged into the router rather than a traditional phone socket).

6.3.10.2 *Standard broadband customers*

6.67 Standard broadband customers (e.g. ADSL) may face higher price rises than superfast (FTTC) broadband customers when they migrate to FTTP. Ofcom suggests that this impact will be mitigated because only a small proportion of customers will be using standard broadband when it is withdrawn by CPs; and because providers will have commercial incentives to compete to provide these customers with an appropriately priced product on the upgraded network.

6.68 We do not agree with Ofcom's assessment as we project that a meaningful proportion of customers will remain on standard broadband during the review period. [✂]. These customers are less likely to value FTTP; consequently, forcing them to upgrade to a higher speed product at a higher price is likely to reduce consumer welfare, contrary to Ofcom's objectives. Ofcom has not made any meaningful allowance in its plans for the subset of customers whose usage of broadband only merits a basic service below speeds currently offered by FTTC.

6.3.10.3 *Voice-only customers*

6.69 Voice-only customers may wish to continue to access these services at an affordable price. Ofcom states this demand will be addressed by Openreach's commitment to provide voice-only / low bandwidth product variants on fair and reasonable terms.

6.70 We agree that the needs of these customers can be met using the low bandwidth FTTP product. However, we note the challenges in migrating these customers given their current copper-based service meets their requirements and they may be reluctant to experience the disruption of connecting a new service which will offer them no meaningful quality advantages.

6.71 We consider that it would be appropriate to apply a charge control (or secure a commensurate voluntary commitment from Openreach) for the lower speed variants of FTTP, rather than rely on the 'fair and reasonable' obligation. We also consider that there should be a zero upgrade charge for customers moving to the voice-only FTTP product, reflecting that they will be unwilling to pay for an upgrade which offers them no benefits. The costs of such upgrades can be recovered from the supernormal profits which Ofcom's proposed price caps on FTTC products will provide to Openreach. Many of these customers will be vulnerable and/ or in low income brackets and would struggle to afford any price premium to cover upgrade costs.

6.3.10.4 *Business customers*

6.72 Business customers will face additional challenges if they purchase multiple services across different sites from a range of providers. Ofcom suggests that these scenarios can be worked through in the industry working group and addressed during the Openreach trials.

6.73 We agree that there will be additional migration challenges for business customers and all parts of the value chain require consideration. For example, TalkTalk Business sells copper-based products through our Direct and Partner channels. In the case of Partners, we may not

have visibility of the bespoke connectivity options that they offer to retail and/or business customers. Partners also often have contract lengths exceeding two years, as noted above, and this needs to be considered within the proposals so as not to lead to customers being forcibly terminated within their contracted periods.

6.74 Also, of relevance to the migration of business customers, is the need for continuing availability by Openreach of the enhanced service levels provided under Care Levels 3 and 4 for FTTP. Without the continued provision of these care levels, we anticipate further barriers to the migration of business customers to FTTP where these customers require continuity of service and resilience.

6.3.10.5 *Critical National Infrastructure*

6.75 Critical National Infrastructure (CNI) customers that use copper-based services may face price increases in exchanges where the copper charge control is removed when coverage is complete. We suggest this impact on CNI should be addressed via similar commitments to those Openreach has provided in respect of vulnerable customers discussed below: it should commit to providing copper services to CNI at prices similar to the charge control levels.

6.3.10.6 *Vulnerable customers*

6.76 We agree with Ofcom that it is particularly important that the needs of vulnerable customers are protected during the migration. Ofcom suggests that where these customers must remain on copper, or need to roll-back to copper, due to vulnerability requirements (e.g. the use of telecare alarms that are not compatible with FTTP), CPs should provide the service at the same price as prior to the removal of the charge control. Ofcom states that Openreach will commit to providing copper services at "*similar*" prices to vulnerable customers throughout the market review period. While we support the intention to ensure vulnerable customers do not face higher prices while remaining on their existing service, we consider that the detail of how this will be implemented by Openreach and CPs requires more consideration, and any voluntary commitment must be subject to consultation with CPs through the industry groups.

6.77 The Openreach trials in Salisbury and Mildenhall are vital to testing out the full range of migration journeys and use cases; developing cross-industry processes to support vulnerable customers; and planning public engagement and communication. Experience from the trials will then inform the approach to migration at subsequent exchange areas. We have raised concerns separately with Openreach, the OTA, and Ofcom about the current timelines, collaboration and governance arrangements for the trials that need to be addressed to ensure they are successful, risks are managed appropriately, and the lessons learnt from the trials are maximised for all parties. We would expect to see Ofcom apply lessons learnt from the trials in shaping its regulatory approach, however we note that the trials will not have concluded before Ofcom intends to publish its decisions in this review. It would be appropriate for Ofcom to keep its copper retirement decisions under regular review to allow for updates based on lessons learnt from the Openreach trials to be reflected.

6.3.11 *Framework for copper switchover and copper retirement*

6.78 Ofcom's focus is on how SMP regulation should be adapted to support the migration from legacy copper. While we agree this is the appropriate focus in terms of SMP regulation, we would also highlight the role of migrations to altnet FTTP networks in the transition from copper to FTTP. Ofcom notes the following factors will support competition by altnets for migrating customers: the transparency requirements it plans to implement with Openreach will enable altnets to plan their commercial activities to attract retail or wholesale customers onto their networks, and the changes to implement gaining-provider led switching process across different infrastructure required by the European Electronic Communications Code (EECC) (V3 §2.43-2.44).

6.79 We expect continued engagement by Ofcom to assess and address any potential barriers to migration to alternative networks and how these relate to copper retirement in areas where alternative networks have rolled out 100% FTTP. As noted above, it is important that Ofcom takes steps to ensure that the copper retirement measures are not anti-competitive in areas covered by both Openreach and altnet FTTP, including assessing if the costs/time required to move to altnet FTTP due to Openreach policies are discriminatory. In addition to Openreach trials, we are planning [✂].

6.80 Overall, we would welcome further engagement across Ofcom, government and industry to consider the path to 100% FTTP availability and take-up and the withdrawal of legacy copper. We think the following issues require further consideration:

- **The roadmap for exchange closure**. Withdrawing the copper and rationalising exchange footprints is not only fundamental to the business case for Openreach to invest in FTTP but also for CPs to invest in upgrading their systems and migrating their customers to the new network at scale. Collaboration and transparency by Openreach on the plans for, and timing of exchange closure, as noted above, will be important to facilitate planning by CPs.
- **Likely FTTP take-up.** Assessment of the likely take-up of FTTP by customers over time and the impact on the pace of FTTP roll-out and copper retirement plans. This assessment is vital to inform policy development and consider if any further interventions are required to achieve the objective of 100% FTTP. We note that research commissioned by the Broadband Stakeholder Group (BSG) will provide evidence to inform this assessment. The BSG research programme includes a WIK-Consult report assessing international experiences on barriers to gigabit adoption and further research into consumer awareness and demand for FTTP in the UK.

6.81 We believe that addressing these issues, in addition to Ofcom's proposals for the transition of regulation from copper to fibre, will be important to ensure that incentives are aligned to support the migration to full fibre, risks of coordination failure are addressed and network competition is sustained.

6.4 WLA - non-price remedies

6.82 Volume 3 of Ofcom's proposals sets out the non-price remedies which it proposes to adopt in the WLA, business connectivity and passive infrastructure markets. These remedies, which are generally less contentious than price remedies are discussed below. First we discuss general remedies that apply across all the markets and then the specific remedies for WLA in Areas 2 and 3. The specific remedies for business connectivity and passive infrastructure are discussed in section 7 and 8, while the remedies for Area 1 in the WLA market are discussed in section 5.6 above.

6.4.1 *General remedies*

6.83 General remedies are set out at section 3 of volume 3 of Ofcom's proposals. The core proposals, and TalkTalk's views on each of them, are as follows.

6.84 *Requirement to provide network access on reasonable request*– this remedy underpins all of the other remedies proposed by Ofcom. In the absence of it the other, more detailed, remedies on pricing and quality of service would be useless, as they could be evaded by Ofcom simply refusing to deal with CPs.

6.85 *Requests for new forms of network access*– TalkTalk agrees with Ofcom that there should be an appropriate process for agreeing new forms of network access with Openreach, and should publish clear and transparent criteria for how these requests will be considered. This will help reduce potential discrimination, but will not remove it.

6.86 However, TalkTalk is concerned about Ofcom's proposals to remove the SoR process for most MPF products. It is likely that MPF will remain an important product for millions of customers throughout the next control period. As such, it is likely to be important for Openreach to develop new product variants and support for MPF, as customers bandwidth needs grow and change. Even if the SoR process remains in place, Openreach and CPs will have the ability to reject product development requests that are not proportionate or which divert limited resources from more important developments. Some changes may be small, and have benefits across the industry which considerably outweigh their costs (including opportunity costs). Ofcom should therefore reconsider its proposals.

6.87 *Equivalence of inputs*– TalkTalk agrees with Ofcom that equivalence of inputs (EoI) conditions need to be imposed in order to ensure that there is a level competitive playing field between different retail CPs, and more particularly between BT's downstream brands (BT, EE and Plusnet) and other CPs operating over the Openreach network (primarily Sky, TalkTalk and Vodafone). TalkTalk agrees that EoI is the most effective form of non-discrimination obligation, and that this should be imposed on all WLA services, including FTTP services.[141] At V3 §3.70, Ofcom states that it plans to allow itself to consent in writing to derogations from EoI during the next control period, to allow Openreach to respond in a competitive way. This is reasonable, but only if Ofcom publicly consults on any particular

[141] But excepting sub loop unbundling (SLU) services. SLU is a niche service which is of likely to be of little relevance to competition by the end of the next regulatory period.

proposed derogation before permitting it to occur. Such a consultation need not be time consuming, and could potentially be of less than a month in duration.

6.88 *Requirement to publish a reference offer*– Ofcom proposes that Openreach should be obliged to publish a reference offer containing the terms and conditions of its offer, including technical conditions, service level agreements and service level guarantees. TalkTalk agrees with this proposal: we agree with Ofcom's analysis (V3 §3.98) that it makes it easier to monitor potential anticompetitive behaviour; and we consider it important for actual and potential purchasers of regulated products to be able to know the specific terms under which they are buying from Openreach.

6.89 *Requirement to notify changes*–Ofcom proposes (V3 §§3.119-3.121) that Openreach should notify its customers of several types of changes in WLA markets:

- 90 days' notice to be provided of permanent changes to prices, terms and conditions in WLA markets, and of any change conditional on the volume or range of services purchased; and
- 28 days' notice of temporary special offer price changes, or of changes relating to the introduction of new products.
- notification when an exchange area has reached 75% coverage with FTTP and when an exchange area has been completed, along with 12 months' notice of Openreach anticipating that these thresholds will be reached.
- one working day notice required when extending a special offer.

6.90 TalkTalk agrees with these notice periods in Area 3, Area 2c, Area 2b, and Area 2a. However, in Area 1 during the transitional period to deregulation, there may be less need for long term notice of changes in prices, terms and conditions.

6.91 *Requirement to notify technical information*– Ofcom proposes to mandate Openreach to publish changes in technical information at least 90 days in advance of the introduction of new services, in order that affected CPs have time to adjust to changes which may impact them. TalkTalk agrees with this proposal.

6.4.2 *Remedies specific to the WLA market*

6.92 This section assesses non-price remedies impacting the WLA market.

6.4.2.1 *Requirement to provide LLU in the form of MPF*

6.93 Ofcom proposes (V3 §§5.7-5.30) to oblige Openreach to provide MPF, in order to support and sustain competition in retail broadband markets. Ofcom forecasts that MPF will be used for around a third of broadband lines by 2026 and notes that in the absence of an obligation to offer MPF, Openreach would be incentivised to discriminate against rivals using MPF, particularly since it uses MPF to a limited degree itself. TalkTalk agrees with this proposal. MPF has been central to the historic success of regulatory policy in the UK, enhancing retail market competition well above the levels seen in other developed nations and will remain

important over the period until 2026 (albeit at a lower level) since the majority of volumes over the Openreach network will be served using MPF.

6.4.2.2 *No requirement to provide LLU in the form of SMPF*

6.94 TalkTalk agrees with Ofcom retaining its position, as set out in the 2018 WLA market review, that SMPF no longer needs to be offered by Openreach as a regulatory requirement. SMPF is now a legacy product with a rapidly diminishing customer base and BT downstream divisions are the main customers for it; if Openreach chooses to support it, this should be on a commercial basis.

6.4.2.3 *Requirement to provide VULA*

6.95 Ofcom proposes to continue to require Openreach to offer VULA-based services (i.e. GEA-FTTC and GEA-FTTP) in order to support competition in downstream markets and avoid Openreach favouring its own downstream retail divisions (V3 §5.38). It reiterates (V3 §5.40) a number of features which VULA access should include, such as access at the first feasible aggregation point, being service agnostic, and being uncontended.

6.96 TalkTalk agrees that VULA must continue to be offered by Openreach: it is the basis for most of the competition in consumer broadband markets at present, as it is the primary way that TalkTalk and Sky are able to serve their superfast and ultrafast customers. In the absence of Openreach offering VULA, there would be serious customer harm as the competitive impact of TalkTalk and Sky would be essentially removed.

6.97 At V3 §§5.31-5.57, Ofcom also sets out a number of other considerations regarding VULA, including price caps, a reference offer, and the impact of copper retirement. These issues are considered elsewhere in this document.

6.4.2.4 *Minimum contract period for VULA*

6.98 Ofcom proposes (V3 §5.59) that there should be a one month minimum contract period on wholesale VULA services. TalkTalk agrees that a short minimum contract period will tend to promote retail market competition. There is no need for a long minimum contract term given connection charges on MPF and FTTC products typically fully recover the incremental costs of connecting customers.

6.4.2.5 *Requirement to provide SLU*

6.99 Ofcom proposes (V3 §5.66) to require Openreach to provide sub-loop unbundling (SLU), although does not propose to impose a price cap. SLU is used at just 200 cabinets of a total of 109,000 cabinets and are likely to support fewer than 10,000 lines,[142] meaning that the benefit it delivers to consumers is limited. SLU usage is likely to fall as Openreach rolls out FTTC and FTTP. Therefore, we consider this obligation is disproportionate, particularly in

[142] Openreach has 24m lines. Assuming cabinets were of average size and SLU operators took 20% share this would equate to about 9,000 lines.

light of Ofcom's preference for reducing regulation and imposing the 'least onerous' regulation. The approach to SLU is also strikingly inconsistent with the approach to SMPF where regulation was removed in 2018 despite SMPF volumes of around 1,000,000 lines. Removing the obligation will have little impact on the risk of Openreach discrimination since it can anyway discriminate by raising prices or reducing quality.

6.4.2.6 *Low bandwidth fibre product for narrowband services*

6.100 At V3 §§5.83-5.90, Ofcom considers whether to introduce a regulatory requirement to introduce a low bandwidth FTTC/P IP-based product. At present, Ofcom does not propose to impose a regulatory requirement to offer such a product, as Openreach has stated that it plans to introduce a symmetric 500kbps product in the first half of 2020.

6.101 TalkTalk considers that this product is likely to be an important one for a subset of customers who are seeking a voice only product. This will represent a meaningful proportion of the market, potentially in line with the proportion of customers who take a voice only product at present. Ofcom will be aware that it has recently identified problems in the voice only market, and proposed reintroducing retail price regulation before obtaining a voluntary commitment from Openreach which were broadly equivalent to those which would likely have been enforced by regulation.

6.102 However, we also recognise that there is a need to avoid unnecessary regulation if possible. Therefore Ofcom should introduce the minimum regulation needed in order to obtain a reasonable level of service for the set of customers who require a voice-only service. At a minimum, we consider that Ofcom should impose regulation requiring Openreach to offer a low bandwidth FTTP product on fair and reasonable terms; non-discrimination requirements; price publication; and a suitable notification period before there are any price changes. Ofcom should also stand ready to introduce more stringent regulation if evidence comes to light that Openreach is engaging in behaviour which harms consumers through excessive pricing or low quality .

6.5 Quality of service

6.103 This section considers Ofcom's proposals regarding quality of service (QoS) in WLA markets. As such, it responds to the elements of section 7 of Ofcom's consultation which cover quality of service.

6.104 At the outset, TalkTalk agrees that it is appropriate to regulate the level of quality of Openreach products. Before Ofcom introduced quality of service standards back by compensatory payments in 2014, Openreach had sought to increase its profits by reducing staffing levels, which reduced its quality of service (as set out by Ofcom at V3 §7.18). Openreach retains both the ability and incentives to adopt this approach again. It is vital that there is always a regulated Openreach product available to every household in areas where Openreach holds SMP (i.e. Areas 2 and 3).

6.105 Ofcom states that Openreach's quality is at a "*good level*" and does not propose any improvement in the standard up to 2026 (V3 §7.20):

We think that the existing standards and levels have brought Openreach's service quality to a good level. We are therefore proposing to broadly maintain the existing standards in each of the wholesale local access ... markets. However, there are some aspects of this regulation where minor alterations may be appropriate to keep pace with the changes in Openreach's product portfolio. We address these issues separately below – the upper percentile standard (7.25)... aggregation of new WLA services (7.47), FTTP (7.517.51)

6.106 Ofcom does not appear to have considered prospective or future conditions in reaching its conclusion. Ofcom's analysis elsewhere is rightly prospective, considering how competition will change over the regulatory period and suitable remedies to address market power during this period. However, its proposals on QoS only consider the current position.

6.107 TalkTalk considers that consumers' demands for quality of service on MPF/FTTC will increase over the course of the control period for at least two reasons: as broadband becomes more important to consumers the demand for higher quality will increase; and as consumers become aware of the higher quality FTTP services their expectations for their non-FTTP service will accordingly increase.

6.108 Ofcom should therefore conduct a prospective analysis of the quality demands of customers, and align its QoS requirements to these demands. This is particularly important in Area 2b and Area 3, where no entry is expected meaning that consumers will have no option to migrate to an altnet network and there will be little scope for quality of service to be enhanced by competitive tension.

6.109 Ofcom should consider whether it might be appropriate to set higher QoS standards in Area 2b and in Area 3 than in Area 2a and Area 2c. TalkTalk does not consider that Ofcom has provided adequate reasoning in V3 §7.42 to support its view that QoS standards should be the same across the UK: it is unclear what "*We are proposing the same standards because we see them as an integral part of all regulated products and therefore we think that they should apply no matter where the product is located*" even means. If Ofcom wishes to rely on this argument, it should expand on why a level of (say) 88% for repair completion is integral to a regulated product, but a 90% level is not integral. There is no obvious logic to this position.

6.110 Ofcom has also failed to consider whether the costs of enhancing quality will be lower at the end of the regulatory period than at the time of the last charge control review. If it is lower cost to provide a higher level of quality (for example, because lower fault rates on FTTP lines, and an increasing proportion of customers being served by FTTP, provide spare engineering capacity) then the cost/ benefit calculus will itself have changed, and it may be optimal to set a higher quality of service level even if customer preferences have not changed.[143]

[143] Note that the cost of increasing engineering capacity and the savings from reducing unneeded engineering capacity will differ substantially, implying that even where it would not be appropriate to increase resources to improve quality of service, it may be appropriate to retain existing resource levels and increase quality. For example, increasing capacity will require spending on recruitment, staff training, and a period of lower productivity while workers get up to speed, none of which expenditure would be needed for retaining existing staff. On the flip side, reducing staffing levels would require union agreement, redundancy pay, and often other expenditures such as careers advice and retraining payments to released staff. There will therefore be a substantial asymmetry between the cost of increasing capacity, and the cost of maintaining capacity.

6.111 Ofcom says that at present it is difficult to determine the appropriate level of QoS standards for FTTP (V3 §7.52). However, rather than having no obligations for QoS on FTTP Ofcom should consider the following options:

- Setting a 'safety net' level of quality at the quality level for MPF/FTTC, which should be easy for Openreach to meet given the higher underlying product quality of FTTP;
- Commit to reviewing the appropriate quality level before end of 2022 by which point data should be available to set an appropriate level. This QoS standard would only apply in the cases where and when a charge control applies to FTTP 40/10 .

6.112 It is also worth noting that increasing QoS on MPF/FTTC will (all else equal) reduce margins on MPF/FTTC and so increase Openreach's incentive to invest in FTTP rollout.

6.5.1 *QoS reporting*

6.113 Ofcom sets out its proposals on QoS reporting at V3 §§7.53-7.65 of its consultation. These proposals are broadly that:

- largely to continue to provide existing quality of service statistics (V3 §7.55);
- not proposing for Openreach to split KPI data between different geographic areas (V3 §7.56);
- proposing to change WLA tail reporting from quarterly to biannually (V3 §7.56);
- proposing to require Openreach to make KPIs available within fifteen days of the end of the reporting period (V3 §7.56).

6.114 TalkTalk agrees that in general the current QoS KPIs are appropriate for monitoring Openreach's performance.

6.115 However, we disagree with the proposal that Openreach should not split its QoS statistics between different geographic areas. We consider that, at a minimum, Openreach should split QoS KPIs between Area 1 (if SMP is found or transitional regulation is found), Area 2 and Area 3. If Ofcom concludes that there are separate markets in Area 2 (i.e. 2a, 2b, 2c) then the KPIs should be split by these too. This will allow Ofcom and stakeholders to identify if Openreach is behaving in an exploitative or exclusionary manner such as by reducing quality where competition is weaker.

6.116 Ofcom sets out at V3 §7.62 that it does not propose regionally disaggregated KPIs because '*although we are proposing to make directions setting reporting requirements in each respective geographic market (i.e. Area 2 and Area 3), we are proposing that the reporting is provided in aggregate for each product market given that in each case we are applying the same QoS standards across both geographic markets*'. This does nothing to deal with a concern that even if Openreach may discriminate by reducing quality in less competitive areas.

6.5.2 *Potential future changes to standards*

6.117 Ofcom sets out at V3 §§7.66-7.69 a number of considerations regarding potential future changes to quality of service standards, including Openreach's vision of commercially

negotiated quality of service arrangements, and the possibility that cherry picking on the basis of PIA might leave Openreach with a set of circuits which are more difficult to serve.

6.118 TalkTalk would welcome the ability to negotiate long-term commercial agreements with Openreach, particularly for FTTP including QOS levels. [✂].

6.119 This reflects that the negotiation simply cannot be a standard one between equal commercial trading partners– due to Openreach's SMP, it is an unavoidable trading partner for a CP like TalkTalk, and is therefore able to offer appreciably worse commercial terms on quality of service without being concerned that we might move our business to another provider. Consequently, there will always be an incentive for Openreach to offer sub-competitive quality of service in any negotiated contract, and it will have the ability to do so unless constrained by regulation. In order for there to be any effective negotiation on quality, therefore, Ofcom will have to be ready to step in and regulate immediately in the case of a breakdown in negotiations. It should particularly do so if it sees that Openreach has been unwilling to offer a level of quality of service in line with those provided in commercially negotiated contracts with networks which do not hold SMP.

6.120 In the event that major CPs such as TalkTalk and Sky are able to conclude long-term agreements to take FTTP in the near future, it may be that Ofcom does not need to impose any regulation. Ofcom should only resile from regulated quality of service in the event that agreements are signed which cover the whole term of the next regulated period (until 2031) with all major CPs, allowing these commercial agreements to render regulation redundant.

6.121 On FTTC QoS, regulation is likely to be required until FTTC is supplanted by FTTP. However, this should happen over the next two control periods, and it is likely that FTTC will be considerably less important as a product in 2026-31 than in 2021-26. This reflects the inability of Openreach and CPs to even agree an appropriate fault standard for broadband faults; as TalkTalk has previously outlined in detail to Ofcom, the current SIN 349 standard is not fit for purpose for lines predominantly used for broadband, but another standard is yet to be agreed on across the industry.

7 Business connectivity – market analysis and remedies

7.1 This section provides comments on Ofcom's proposed regulation for leased line services. We refer to this market as business connectivity which comprises both active leased lines and dark fibre products as well as access circuits and inter-exchange circuits. This aligns with Ofcom's previous approach.

7.2 This section covers all of the aspects of Ofcom's analysis of the business connectivity market: product and geographic market definition; SMP assessment and remedies.

7.3 Overall, Ofcom's market analysis has significant flaws. The proposed remedies are not based on evidence and consequently are likely to harm consumers and businesses through higher prices, less competition and reduced innovation with minimal or no offsetting benefits, including little or no uplift in network investment.

7.1 Use of BCMR19 approach and data

7.4 Ofcom's product market definition, geographic market definition and SMP assessment have not been conducted for the current WFTMR but rather adopts the same method, data and conclusions that were used in the most recent BCMR (published June 2019) – see vol 2 §6.70, §7.71 and §8.78.

7.5 This is an inappropriate approach for Ofcom to adopt. The most recent BCMR was concerned with market conditions for the period ending in March 2021. The WFTMR is concerned with the period from April 2021 to March 2026; it ends seven years after Ofcom's BCMR 2019 statement was published. Ofcom's market analysis should be prospective analysis, which implies that it should consider competitive conditions across the regulatory period, rather than at the time the decision is taken. It is unlikely that these competitive conditions will be identical in 2021-2026 as they will be in the period 2019-2021.

7.6 As such, it is imperative that Ofcom reassesses its market definitions, looking forward to the upcoming period rather than backward to 2019. This may lead to the same product and geographic market definitions being adopted, if expected competitive constraints in 2026 are the same as those which were expected in 2021. However, it is important that evidence is gathered to assess whether conditions are similar or not.

7.7 In particular, the data used for SMP assessment has not been updated – Ofcom has continued to base its analysis on the data used in BCMR19 (which was itself largely based on calendar year 2017 data). This is now already over two years out of date, and will be further out of date by the time the WFTMR concludes. Ofcom should update its data, particularly prospective data, which may change its assessment of competition in the CLA and other markets.[144]

7.8 During the recent appeal (Competition Appeal Tribunal Case 1330/3/3/19) of the BCMR19 decision, Ofcom presented various pieces of evidence to the panel in open court. Some of this was new evidence was not included the BCMR19 Statement, such as information

[144] In either direction. For example, entry and expansion could increase constraints on BT, while mergers between leased line providers could reduce constraints on BT.

regarding the presence of rival infrastructure (including rivals with existing fibre connections into buildings). Thus, there appears to be evidence that Ofcom relied on for the appeal which it has not relied on for WFTMR (since the WFTMR uses data from the BCMR19). This appears to be an anomaly.

7.9 TalkTalk asked Ofcom to clarify whether it is relying on this new evidence for WFTMR. Ofcom responded: "*The consultation sets out our proposed market definitions, SMP findings and remedies and the evidence we have used to support those proposals. Should we seek to rely on other evidence, we would consult on this evidence where we consider it is appropriate to do so.*" Thus it seems that Ofcom has not relied on the data presented in the appeal. It is surprising that Ofcom considered this new evidence important in a litigation proceeding defending its earlier decision but not for the WFTMR. Ofcom must explain why it has not relied on this new evidence – for instance, is it not relevant given some change of circumstances, or is it no longer correct.

7.2 Business connectivity – product market definition

7.10 This section examines product market definitions for leased line markets both access circuits and inter-exchange circuits, as well as considering whether there is a separate dark fibre product market in addition to the leased line market. In each case, the appropriate approach is to start with the narrowest conceivable product market (referred to as the 'focal product') and then ascertain whether supply- or demand-side substitution would be sufficient to act as a constraint against a hypothetical monopolist of that focal product by making a small but significant increase in price ("SSNIP") unprofitable. If there are such constraints then the market should be expanded to include the next closest substitute products, which would be included in the expanded product market which is then tested for substitutes. This process continues until there are no substitutes which exercise a sufficient competitive constraint. This group of products then constitutes the economic market.

7.2.1 *Leased line access*

7.11 TalkTalk agrees that it is appropriate to start from a focal market which is no wider than leased line access products. By leased lines we mean active products such as Ethernet and DWDM products, but not passive dark fibre products.

7.12 In this case, the appropriate focal product market is narrower even than just leased line access products. Rather, Ofcom should commence its market definition from each individual speed of leased line access products. At V2 §6.73, Ofcom sets out that it has correctly adopted this approach when determining its product market definition.

7.13 Ofcom's analysis of the appropriate product market is that there is a single product market for all bandwidths of leased line access circuits, based on supply-side considerations (V2 §6.72). TalkTalk agrees that based on supply-side considerations the products are substitutes

and therefore it is irrelevant whether there is demand-side substitution[145] or not. We agree that propensity to dig is similar for all circuit speeds: there is very little digging for circuits of any speed (V2 §§6.74-6.75) unless these are part of broader contracts which make the incremental cost a very low proportion of revenues.[146] A similar propensity to dig supports a single market encompassing all speeds, as it implies that a given network structure will support the same geographic market definition irrespective of the speed demanded by consumers.

7.14 Where dark fibre access is available in an area, TalkTalk anticipates that this would act as a competitive constraint on leased line access circuits. Dark fibre access, when used by a CP which installs its own active equipment, can offer all of the functionality of active circuits, and will generally be able to do so while offering more control and at no higher cost. Furthermore, suppliers of active circuits, at whatever speed, will generally be able to offer a dark fibre product quickly and at low setup cost. Dark fibre therefore acts as a competitive constraint on active circuits at all bandwidths on the basis of both demand- and supply-side factors.

7.15 In contrast, inter-exchange circuits will generally not act as a constraint on access circuits, due to the limited geographic scope of networks which would be required solely for supplying inter-exchange circuits, and one of their end points being at the consumer premises rather than at an exchange. Inter-exchange circuits should therefore not be included in the market when the focal product is an active leased line access circuit.

7.16 Broadband products, even based on FTTP, are also unlikely to act as an effective competitive constraint on a hypothetical monopolist of leased line access products. While FTTP may be able in some cases to match the speeds of some leased line services– particularly 100 Mbps leased line services– it cannot match the other characteristics of leased line services such as leased line products being uncontended and based on dedicated capacity[147]; jitter and latency are higher in FTTP service than in leased line services. As such, FTTP broadband products would only be a potential constraint for a subset of leased lines access products – those which were at 100 Mbps speeds[148] and where the customer did not require uncontended services. TalkTalk therefore agrees with Ofcom's analysis at V2 §6.81 that based on demand-side considerations FTTP based broadband is in a separate market to leased line access products.

7.17 TalkTalk also agrees with Ofcom's analysis at V2 §6.82 that, due to differences in network topology and other factors, there will not be effective supply-side substitution from FTTP broadband networks into leased line access networks. [✂]

[145] There may be a number of factors that might suggest that higher speeds are in a separate market such as: lower BT share at higher speeds; less competition at low speeds or SSNIP test. However, all these are unreliable since they are distorted by the non-competitive price levels prevailing in the market (i.e. the Cellophane Fallacy)

[146] For example, there could be a willingness to dig to build a circuit when it is one part of a UK-wide or pan-European contract which covers dozens of circuits, when there would not be any willingness to dig for a solus circuit.

[147] [✂].

[148] 10 Mbps leased lines are now largely a legacy product which are not consumed by new acquisitions.

7.18 Therefore, we consider that Ofcom is correct to define a product market that contains leased line access products and dark fibre access products but does not include inter-exchange products or broadband products.

7.19 We note that Ofcom begins its assessment of leased line product market definition (V2 §§6.9-6.10) by highlighting a number of 'market interactions' between WLA services and leased line access service such as: MSNs providing both products; that higher speed WLA services provide an alternative to leased lines in some cases; and the viability of MSN networks "*relying*" on providing both products. This approach indicates an apparent prejudice in Ofcom's approach of trying to reach a particular conclusion that there is a single converged market encompassing WLA and leased line products. Market definition is not an exercise in trying to reach a particular answer to serve a particular conception of the 'right' answer but rather should be a bottom-up objective exercise in assessing whether particular products constrain each other.

7.2.2 *Dark fibre access*

7.20 The second type of product which Ofcom needs to define markets for is dark fibre access.[149] Curiously, though Ofcom has correctly considered whether dark fibre is a substitute for active leased lines (and found it to be within the active leased line market) it does not appear to have attempted a market definition exercise based on dark fibre as a focal market – this is an error by omission. Dark fibre access should be considered as a focal market, as it is a narrow product market, and is certainly distinct from focal products of different speeds of leased line service.

7.21 In this case, the process of product market definition commences with dark fibre access as the focal product – dark fibre access is the market for dedicated circuits without active electronics attached to them, located everywhere other than between BT exchanges. The market sits upstream of the market for active leased line access circuits: it is both an input into that market, and in some cases a constraint on the products in that market, in instances where a purchaser has the choice of either renting an active circuit or renting a passive dark fibre circuit and installing its own electronics. The dark fibre market therefore sits between the physical infrastructure market as defined by Ofcom in its proposals, and the leased line market.

7.22 It is notable that whereas there is no provider supplying physical infrastructure access (i.e. ducts and poles) on an unregulated basis on the UK, there are multiple suppliers of dark fibre access products. This means it will be easier in practical terms to define an appropriate product market in dark fibre than in physical infrastructure, as it is not entirely hypothetical.

7.23 It appears unlikely that any other product will act as an effective constraint on the dark fibre access focal product.

[149] Note that dark fibre is not synonymous with the Openreach dark fibre access (DFA) product. Dark fibre access is a subset of all dark fibre lines. Rather, the market here is all of dark fibre- every fibre suitable for leased line usage which has been blown into a duct, not including any active electronics which are used to light the fibre.

7.24 Active leased line products cannot act as a constraint on dark fibre as they need dark fibre themselves in order to be able to operate. Even if this were not the case, and the role of dark fibre in providing active leased line circuits is ignored, active leased lines offer less functionality and control than dark fibre and therefore would be unlikely to act as an effective competitive constraint on a hypothetical monopolist of dark fibre.

7.25 When considering dark fibre, it needs to be recognised that this is an input into the actual active products which businesses will consume, forming only a part of the cost stack, with other elements comprising the cost of the active layer, and the cost of the service wrap which the CP places around the product. The presence of external intermediaries also means that pass through of wholesale price increases into retail prices will be less than 100%. A price increase of 10% in dark fibre will therefore translate into a price increase to end user businesses of far less than 10%. This means that retail demand for circuits with dark fibre as an intermediate input will have to exhibit elasticities of demand well in excess of 1 in order to constrain a hypothetical monopolist of dark fibre from imposing a non-transitory increase in price of 5-10%.[150] This strongly implies that dark fibre is likely to be a market independent of constraints from any other potential substitutes (such as 5G).

7.26 Dark fibre access is unlikely to be constrained in any meaningful way by products such as fixed wireless access. Fixed wireless cannot replicate the features of dark fibre since, for instance, it requires line of sight, cannot support as high speeds as dark fibre, costs more and is less reliable[151].

7.27 This leads to a product market comprised solely of dark fibre access. Ofcom should therefore define such a market in its market assessment, conduct an SMP assessment of that market, and, if SMP exists, impose suitable remedies to address this SMP.

7.28 The Commission recommendation states that Ofcom should assess each market downstream of the most upstream market it analyses (PIMR in this case) which implies that Ofcom should assess the dark fibre market:

[150] Taking a SSNIP of 10%, the critical loss for a final product market is given by the formula *c=10/(10+m)*, where m is the margin (in percent) before the SSNIP is imposed. So, for a product with a 90% margin pre-SSNIP, the critical loss would be 10%. A pass-through of less than 100% will increase this: for example, with 50% pass-through, the critical loss will double. Similarly, if a wholesale product makes up 25% of the final price of a product, then the critical loss will quadruple. The overall formula is therefore $c=((10/(10+m))/t)/(p_w/p_r)$, where t is the proportionate pass-through, p_w is the wholesale price before the SSNIP and p_r is the retail price before the SSNIP. For example, with dark fibre margins of 80%, pass-through of 70%, and the dark fibre price making up 60% of the final price of an active leased line circuit, the critical loss would be 26.5%, meaning that for a 10% wholesale price increase the critical elasticity would be 2.65. Even relatively high pass-through rates and high proportions of wholesale costs in retail costs can still drive substantial increases in elasticity of demand.

[151] Even if fixed wireless could provide many of the same characteristics as dark fibre, then there would be a need to persuade end business users that they should switch to a largely untried approach for providing their connectivity arrangements; this follows from the fact that demand for dark fibre is a derived demand, being used as an input into the provision of other products. Business users are generally considered across the industry to be cautious in their adoption of new connectivity products, as connectivity is so important to modern businesses that they risk complete shutdown in the event of failures. This means that businesses will be reluctant to switch technologies in the case of small but significant price increases.

… A national regulatory authority should conduct a gradual analysis of the markets that are situated downstream from a regulated upstream input, to determine whether they would be effectively competitive in the presence of regulation upstream, until it reaches the retail market(s).[152]

7.29 We note that the dark fibre access market passes the three criteria test as laid down by the European Commission for markets which are susceptible to ex ante regulation:

- *There are high and non-transitory barriers to entry*– even in the presence of a PIA remedy, entry is likely to take a considerable period of time and require the expenditure of very substantial sunk costs.. The barrier to entry is increased by the lumpy nature of demand in many parts of the country, and the fact that Openreach, as the leading provider of dark fibre, is also the leading consumer of dark fibre products through its downstream division, meaning that much of the market is effectively not addressable by entrants. There are considerable economies of scale in the dark fibre market, due to the fixed cost nature of the cost structure. All of these factors combine to create high barriers to entry.
- *The market structure does not tend towards effective competition in the next control period*– there are no forthcoming technical developments or investments which lead to the conclusion that the dark fibre market will become competitive over the course of the next control period. The dark fibre market, as an input into leased lines, will be unaffected by competition from other communications modes such as mobile and fixed wireless. In much of the UK, Openreach is an effective monopoly, and other providers cannot expand their market share; even in parts of the UK where Openreach faces some degree of competition from other networks, the long contracts prevalent, the need for track record and credibility, vertical integration, and switching costs mean that it will take a considerable time for other, smaller, providers to win market share. There is consequently no prospect that other providers will win sufficient market share from Openreach in the next control period to lead to effective competition in the dark fibre market.
- *Competition law alone is insufficient to address identified market failures*– the market failures identifiable in this market are exploitative rather than exclusionary: that Openreach will refuse to supply dark fibre for use in access circuits, or only do so on terms which are unfair and unreasonable. Competition law is largely ineffective at addressing issues around overpricing, poor quality of service, or refusal to deal. TalkTalk would not expect that Ofcom or the CMA would be able to address refusal to provide dark fibre for use in the access layer through the use of its competition powers.

7.30 It is useful to recognise that though dark fibre can act as a competitive constraint on active leased line products, the opposite is not true. This is particularly because active leased line products themselves use dark fibre as an input, and so a hypothetical monopolist of dark fibre would be able to increase the input prices of all leased line providers.

[152] Commission Recommendation of 9 October 2014 on relevant product and service markets Article 21

7.31 It is important to note that market definition, including the definition of a dark fibre access market, is an area where Ofcom does not have regulatory and policy discretion in the manner that, for example, it may have in the choice of remedies. Rather, it directly follows from Ofcom's duties to define markets for the purposes of assessing SMP. Further, Ofcom cannot say that it has not defined economic market for dark fibre products since it intends to regulate active circuits rather than dark fibre circuits (in some areas), for three reasons:

- market definition is a preceding step in the market analysis to the determination of SMP or the imposition of remedies. Ofcom cannot prejudge its remedies, but can only consider any remedies where it finds SMP; and,
- dark fibre products are an input into active leased line products in the value chain, so remedies in leased line markets cannot remedy SMP in dark fibre markets;
- while dark fibre circuits are likely to impose a constraint on active leased line circuits, the reverse is not true- a hypothetical monopolist of dark fibre would not be constrained by switching to active leased line circuits. Imposing a remedy in the active leased line market therefore could not constrain SMP in the dark fibre market.

7.2.3 *Inter-exchange leased lines*

7.32 Ofcom outlines that the product market definition for inter-exchange leased lines (which Ofcom refers to as inter-exchange connectivity or IEC) includes all bandwidths and dark fibre (V2 §6.97):

> *We propose to continue to include all bandwidths used for IEC services and dark fibre in the same product market. We have not been provided with evidence that the points above have changed since the 2019 BCMR and we do not expect that there will be market developments over this review period to suggest we should come to a different view.*

7.33 TalkTalk agrees that, on the basis of supply-side substitution, all bandwidths of inter-exchange leased line services are likely to be the in same relevant economic market for the upcoming control period. This seems unlikely to change during the relevant review period unless there are unforeseen developments.

7.34 Once again, however, TalkTalk would note that dark fibre is an input into inter-exchange leased line circuits. Although dark fibre can potentially act as a constraint on the behaviour of a hypothetical monopolist of inter-exchange leased line circuits, by allowing a potential purchaser of inter-exchange leased lines circuits to choose to purchase a passive product and provide its own active electronics, the reverse will not be true.

7.2.4 *Inter-exchange dark fibre*

7.35 There is no difference between dark fibre used as an input for inter-exchange leased lines circuits and that used for leased line access circuits, and the economic analysis is directly analogous. In the same way as a hypothetical monopolist of all dark fibre which could be used to supply access circuits would not be constrained by active leased lines, a hypothetical monopolist of dark fibre circuits between BT exchanges would not be constrained by inter-exchange leased line circuits or by any other form of connectivity. There will consequently also be a separate product market for inter-exchange dark fibre.

7.2.5 *Conclusions on product market definition*

7.36 At this stage, the conclusions of both Ofcom and TalkTalk on product market definition can only be tentative, given the lack of evidence presented, excessive reliance on the conclusions of the 2019 BCMR, and scope for market circumstances to change during the upcoming market review period.

7.37 Notwithstanding this, it appears that there are four product markets which Ofcom should consider for geographic market definition and SMP assessment:

- a market for leased line access circuits, comprising all bandwidths of leased line access circuits, and dark fibre access circuits;
- a market for dark fibre access circuits, with this market not containing any leased line access circuits within it;
- a market for inter-exchange leased line circuits, once again including inter-exchange dark fibre within the relevant market; and,
- a market for inter-exchange dark fibre circuits, with this market not including any inter-exchange leased line circuits within it.

7.3 Business connectivity products: geographic market definition

7.38 In this section we consider the appropriate geographic market definition for the leased line access market, dark fibre access market, inter-exchange leased line market and inter-exchange dark fibre market.

7.3.1 *Leased line access products*

7.39 As in other fixed line telecoms markets, geographic market analysis is essentially an exercise in grouping together postcode sectors of similar competitive conditions, typically based on the number of networks 'present' (or expected to be present) in a postcode sector. Failing to conduct geographic market analysis correctly can result in under-regulation or over-regulation, in either case causing harming competition and consumers.

7.40 Ofcom's approach to the geographic market analysis for leased line access products is unusual. Ofcom has used two very different methods to define different parts of the market: it first defines the CLA and HNR geographic markets based on the network reach analysis (NRA) approach which was used in previous BCMRs; Ofcom then separates the remaining parts of the UK into two markets based on analysis of MSN coverage used in the WLA market in this WFTMR. Table 7.1 explains the methods and the parameters they use.

Table 7.1: Methods used to determine geographic markets

Parameter	For CLA and HNR	For remainder of UK into Area 2 and Area 3
	Method 1	Method 2
Networks included	All MSN and leased line only	Large MSN

Existing networks	Yes, at Dec 2017	Yes, at mid-2019
Planned networks	No	Yes
Threshold to be considered 'present'	Network within 50m of 65% of premises	Network pass 50% of premises
Which premises	Large business only	Residential and business
Groupings	CLA: BT+3 HNR: BT+2	Area 2: BT+1 or BT+2 Area 3: BT+0

7.41 The differences between the methods are stark. What is also stark is that Ofcom has not attempted to justify why two such different methods are appropriate for different parts of the UK. The proposed approach seems designed to force consistency between the geographic markets for WLA and leased lines so that Ofcom can align remedies across them. Such an approach is incompatible with the requirement for market analysis to be objective, a requirement where Ofcom does not have regulatory and policy discretion.

7.42 Furthermore, Ofcom has not grappled with the weaknesses in each approach, which include:

Table 7.2: Weaknesses in existing methods

Method 1	Method 2
• Includes small operators who lack credibility/scale • Not prospective since does not take account of future build • Existing coverage based on outdated data • Threshold of 'within 50m of 65% of premises' will mean networks which cannot constrain Openreach's prices are considered present	• Ignores leased line only networks and implicitly assumes that planned MSN will constrain Openreach but that existing leased line networks will not • Does not assess whether MSN builds close to areas of leased line demand such as CBDs and business parks • Assigns areas with very different competitive conditions to same market (Area 2)

7.43 Ultimately the impact of using two different methods and both methods having significant weaknesses is that the economically defined markets will not have homogeneous competitive conditions:

- areas with different competitive conditions are grouped together. For example, Area 2 includes postcode sectors with BT, Virgin and an altnet MSN planned early in the period; and, postcode sectors where there is only BT at present, and perhaps also altnet MSNs at the end of the period
- areas with similar competitive conditions are assigned to different markets e.g. some BT+2 (at end period) postcode sectors in HNR and some in Area 2

7.44 We consider that Ofcom should use a single method for its geographic market analysis. The method that it should use is described below which should ensure reasonably homogeneous competitive conditions.

Table 7.3: Suggested method to determine geographic markets in leased line access

Parameter	Approach	Explanation
Networks included	MSN and leased line only	No reason to exclude leased line only networks Should exclude smaller networks that lack scale and credibility
Existing networks	Up to date	For statement should be mid-2020 data
Planned networks	Some included	Only include where construction in progress or plans provided to street level
Threshold to be considered present	Network within X metres of Y % of premises	This is a sensible approach to assessing whether network act as constraint
Which premises	Large business only	Residential coverage irrelevant for leased lines
Buffer distance (X metres)	10m or less	If rival network 50m from premise unable to act as constraint on Openreach
Coverage threshold (Y%)	65%	Better reflects need for there to be a competitive constraint on Openreach for competition to be appreciably different
Groupings	By number existing / planned rivals	Reflects level of competitive constraint

7.45 We comment a number of aspects of the suggested approach below.

7.46 We think that it is appropriate to only include or 'count' networks where the network is built, under construction or in the detailed planning phase[153]. This is for two reasons.

- First, any network that does not meet one of these criteria will typically be built later in the period and will have a more limited competitive impact given the need to commercially launch the network, establish a reputation for providing effective service quality, and then win a meaningful customer base from a set of customers who are largely contractually locked in to their existing networks – Ofcom recognises the delay in the market impact of networks not yet constructed (V2 §8.61). The limited competitive impact is evidenced by the low market share that entrants have (see §7.116 below).
- Second, if Ofcom does not know the network location down to street level it will be unable to accurately assess whether the network meets the coverage test e.g. within 50m of 65% of business premises. Ofcom cannot use coverage of all premises as a proxy for ability to serve sites with leased line demand. For instance, a planned MSN might pass 60% of all premises within a postcode sector but may not build any network close to CBDs or business parks (which might only account for 3% of premises), therefore having no competitive impact in leased line markets.

[153] By detailed planning, we mean that the altnet builder has planned the network to the extent of knowing the individual streets which will be served by the network. This will be the phase immediately before commencing construction, as streetworks consents will generally need to be sought.

7.47 Ofcom's Method 1 includes all networks, and does not exclude those that are unlikely to act as competitive constraint in areas they cover since they lack credibility or are too localised. Ofcom's approach of including all operators is different to other markets such as WBA, the WLA part of this WFTMR, and IEC circuits. Ofcom has not responded to TT previous comments questioning this approach.

7.48 The buffer distance is effectively used to test whether a rival provides a constraint on Openreach[154]. We consider the buffer distance of 50m is unjustifiably high and that the realistic maximum dig distance is in fact less than 15m. Ofcom said in the course of the CAT BCMR appeal proceedings that it does not consider that the 50m buffer distance is actually the distance which operators are generally willing to dig from a flexibility point to reach customers' premises[155][156]. Rather, Ofcom says that its decision to use a 50m buffer distance largely reflects errors in its geospatial analysis which systematically overstate the actual distance between the flexibility point and the premises[157]. However, there two flaws with Ofcom's approach. First, even if the errors do systematically overstate the actual distance, Ofcom does not come close to justifying that 50m is sensible figure to correct for these errors. Second, there are other errors which mean that the model will in some circumstances understate the actual distance. Therefore, Ofcom's use of 50m leads to significant errors, as it incorrectly implies that leased line providers who are 49m from a site can constrain Openreach when in practice they cannot. This means that if Ofcom use a 50m figure it cannot assume in its SMP assessment that all rivals that are counted as present are able to constrain Openreach.

7.49 We consider a network coverage threshold of 65% would be reasonable, reflecting the need for rivals to impose a sufficient competitive constraint on Openreach to meaningfully alter its competitive behaviour.

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[154] See V2 8.107a where Ofcom explains that they consider a rival that is counted (i.e. within 50m) provides competition to Openreach.

[155] Comment of Ciara Kalmus, Day 3: "*I think there's a point where you have to draw the line somewhere. I would not say the sources of error cancel each other out because to say the sources of error cancel each other out would be to imply the 50-metre distance in the model is an actual dig distance*".

[156] V2 Footnote 243: "*Due to data limitations, we could not accurately measure the distances between the location of networks and customer sites. We did not have reliable information on the extent to which operators had existing fibre or duct connections into specific business sites for most of the UK. Furthermore, we had to approximate where the fibre entry point for a business sites was located and we did not always know the exact location of customer sites, which introduced a degree of error. Taking these factors into account, we considered that we should count rival networks presence for operators with network within a 'buffer distance' of 50 metres of the geographic centroid of post code where the business is located. We thought that this buffer distance would be a reasonable indicator of the number of rival operators' networks that were much closer than 50m to the actual location of businesses. This is because we considered that - due to measurement errors – the distances measured by our model will overstate the actual distances between networks and business sites. As such, the 50m buffer distance in practice captures networks with existing connections or which need very short network extensions*."

[157] These errors are due to the flaws in the data on which the model is based, particularly flaws around knowing the precise locations of business premises and the point at which communications providers can access those premises.

7.50 Other potential areas for improvement include:

- Use of large business premises as proxy for business leased line demand (see Appendix footnote 102) is a somewhat crude proxy which is likely to lead to both false positives and false negatives (for example, Timpson employs over 250 people but is unlikely to consume leased line services at many of its business locations; while a private equity or IT firm may consume leased line products despite employing considerably fewer than 250 staff). Ofcom should consider whether superior options exist.
- Ofcom does not know the locations of buildings within a postcode. Rather, it judges the number of competing networks in the postcode based on their proximity to the postcode centroid, which may or may not be the centre of any actual building. Ofcom should investigate whether there are alternative data sources able to locate buildings more precisely rather than at the postcode centroid– for example, we previously illustrated using the example of TalkTalk's London office that Google Maps could locate buildings specifically, rather than at the postcode centroid.[158] Ofcom should avoid introducing unnecessary inaccuracies into its modelling through unreliable data.
- Ofcom's analysis in London assumed that in the CLA Ofcom was treating all postcodes taking leased line as if the postcode covered only a single building.[159] This is an obviously inaccurate assumption, as many postcodes even in central London have multiple premises in them, which will tend to lead Ofcom's analysis to overstate the closeness of altnet leased line networks to business premises, and therefore to overestimate the competitive constraints on Openreach. Ofcom should quantify and publish details of just how inaccurate the assumption is to the best extent they can before continuing to rely on it.

7.51 In terms of grouping, we consider that the most appropriate approach is to group localities based on the number of networks present at the time Ofcom completes its review, plus the number currently under construction or in the detailed planning phase. This will lead to markets defined as BT+0, BT+1, BT+2, and so forth. Areas defined as BT+3 or more should generally be considered separately under HNRs or the CLA. Unlike WLA, there is no need to distinguish between existing networks and planned networks since the planned networks only include those that will be built or under construction at the start of the market review period.

7.3.2 *Dark fibre access*

7.52 As Ofcom has (inappropriately) not defined a market for dark fibre access when conducting product market definition, it has not considered what the appropriate relevant geographic markets for dark fibre access are. This subsection therefore briefly provides TalkTalk's views

[158] Letter from Simon Pilsbury of TalkTalk to Ali-Abbas Ali of Ofcom, 26 March 2019, at Figure 1.

[159] Question by Alan Bates to Ciara Kalmus, Day 3 of BCMR appeal, transcript page 77 lines 13-21: "*thinking about what you have to do, even where you have got a fibre connection to the building, we know from your postcode analysis, where you assume that one postcode equals one building, that BT is already fibre connected to well over 90 per cent, if I can put it like that, rather than giving the specific percentage, of buildings where circuits are to be found. Is that right?"* Kalmus*: "Yes*"

on the appropriate approach for Ofcom to adopt when conducting its geographic market definition for dark fibre used in the access network.

7.53 It is likely that the appropriate geographic market definition for dark fibre circuits used in the access network will look similar to, and potentially identical to, that for active leased line access circuits. This is because the vast majority of dark fibre access circuits in the UK are currently used as intermediate inputs into active leased line circuits, and are used in this way on a self-supply basis; in particular, all Openreach dark fibre access circuits are used in this way.

7.54 Ofcom should therefore follow the approach set out in section 7.3.1 above when defining the relevant geographic market for DFA.

7.3.3 *Inter-exchange leased line*

7.55 Ofcom explained that it has based its geographic market analysis for the inter-exchange leased line market on competition at exchanges (V2 §§7.96-7.99):

> *In the 2019 BCMR Statement we concluded that connections to one exchange are not a substitute for connections to another exchange. We also said that connectivity from another location (e.g. close to an exchange) is not a close enough substitute to be part of the markets we define. This is because, in both cases, telecoms providers need to be present at a specific exchange to use access remedies in the corresponding access area and, therefore, require onward connectivity from that exchange.*
>
> *In addition, we noted that the conditions of competition can vary at each BT exchange, depending on presence of rival networks. We also said that competitive conditions vary on a route-by-route basis, but that it was not practical to assess competitive conditions for each IEC route.*
>
> *Finally, we noted that, whilst in the LL Access CLA and HNR geographic markets we aggregated locations with similar competitive market conditions as the number of exchange locations is much fewer, we do not do this aggregation. We, therefore, defined each BT exchange as a distinct geographic market.*
>
> *We propose to adopt the same approach as that taken in 2019 BCMR Statement as, our view is that these considerations will be equally relevant for the period of this review.*

7.56 TalkTalk agrees with some elements of Ofcom's approach. In particular, we agree that connections to one exchange are not a substitute for connections to another exchange, because CPs need to be present at a specific exchange.

7.57 However, there is a significant flaw in Ofcom's approach which implicitly assumes that if exchange A and exchange B are each BT+2 exchanges, then a CP will have two potential suppliers (other than Openreach) to supply a circuit on the route between exchange A to exchange B. This may not be the case. If there are different altnet suppliers at each end of the route (e.g. Zayo and Vodafone at exchange A; Virgin Media and COLT at exchange B) then there may in fact be no competing operator to Openreach. In order to be a competitor on a route the same altnet must be present[160] at the exchanges at both ends of the circuit.

[160] To be counted as present altnet does not have to actually provide a circuit from that exchange.

Counting altnets on the basis of their presence at a single exchange will systematically overestimate the extent of competition faced by Openreach. A route between two BT+2 exchanges may be BT+0, BT+1 or BT+2; Ofcom's current approach fails to distinguish between these radically different competitive situations.

7.58 TalkTalk therefore considers that Ofcom's geographic market definition for inter-exchange leased lines should be based on the number of rival networks present on each route, rather than the number present at the exchanges at each end of a route. This will lead to some extra analytical effort for Ofcom, but the effort will be limited since Ofcom has the data to be able to derive the number of altnets that are present at the exchanges at both ends of a route. Further, there is no requirement for Ofcom to analyse every possible route in the UK since, for example, there is no prospect of demand for a route from an exchange in London to an exchange in Scotland. In practice, we estimate that the number of routes for which there might be demand will be 10,000 to 15,000[161] which is not significantly more than the number of exchanges (5,000).

7.59 TalkTalk requested that Ofcom should adopt this approach at the time of the 2019 Business Connectivity Market Review, in response to Ofcom's proposals at that time to adopt the same approach as that proposed in the current review. Ofcom did not respond to these submissions in its final determination, merely stating (§7.43) that:

> *In the 2016 BCMR, we used presence of PCOs at a site as a proxy for competitive conditions between BT exchanges. We continue to consider presence of PCOs to be a good proxy for the amount of competition and therefore the choice available to telecoms providers at BT exchanges for an inter-exchange connectivity service.*

7.60 Ofcom should reconsider this flawed proposal, which is likely to lead a systematic overestimation of the competitive constraints facing Openreach. It should not once again hide from the flaws in its proposals, and should specifically assess the relative costs and benefits of a route based approach versus the exchange-based approach which Ofcom is currently proposing.

7.61 In practice, Ofcom should define as relevant markets every route on which there is currently an active inter-exchange leased line circuit. Where there is demand for a different inter-exchange route in future, and so the level of competition on that route needs to be determined in order to identify the appropriate regulation, Ofcom can develop a simple tool that allows Openreach or another stakeholder to check the level of competition and so the appropriate regulation[162].

7.62 Ofcom sets out its competitor set for inter-exchange leased lines at V2 §8.111. In that paragraph, Ofcom proposes that eight operators (CenturyLink, CityFibre, Colt, eir, SSE, Virgin Media, Vodafone and Zayo) will be treated as effective competitors with the ability to constrain Openreach, and so will be included in the count of competitors for market definition and SMP purposes. TalkTalk notes that Ofcom has not updated this list of competitors since BCMR19, and does not appear to have undertaken any additional analysis

[161] The number of routes is likely to fall gradually as BT's exchange closure programme continues.

[162] Ofcom would develop a database which lists every relevant operator at each exchange. A stakeholder can query the level of competition on each route and that can be provided without disclosing the identity of operators.

to confirm whether this list of competitors remains appropriate. The data request which led to that list being compiled was sent out in April 2018; it will therefore be eight years old by the end of the next review period. Furthermore, Ofcom's reasoning for choosing this competitor set was opaque, as it merely stated that "*To enable us to compile an accurate list of PCOs, which both captures the characteristics noted above and reflects developments in the market, we sent a statutory information request to relevant telecoms providers. On the basis of the responses we received, we propose the following telecoms providers are PCOs...*".[163]

7.63 TalkTalk considers that this competitor set appears excessively broad for the inter-exchange leased line market taken as a whole. [✂].

7.64 The reasoning underlying this is simple, and reflects a dynamic which Ofcom has discussed extensively in the context of PIA: ubiquity is important in the inter-exchange leased line market. [✂].

7.65 Ofcom should therefore reassess its list of PCOs, and remove any which are only used in special instances, rather than being able to compete for volumes across the UK. Operators defined as PCOs should be able to substitute effectively for Openreach volumes, rather than being used as a complementary operator. The current list appears too long to meet this criterion. Ofcom should redraw it on the basis of objective, verifiable criteria such as that an operator can only be designated as a PCO if it is present at a minimum of 10% of BT exchanges across the UK.

7.3.4 *Inter-exchange dark fibre*

7.66 The geographic market definition for dark fibre inter-exchange circuits should be the same as for leased line inter-exchange circuits. The reasoning behind this is the same as why the geographic market for dark fibre access matches the geographic market for leased line access – see section 7.3.3 above.

7.4 Business connectivity products: SMP assessment

7.67 Sections 7.2 and 7.3 have set out the appropriate market definition approach for the various markets, which is likely to lead to a very different set of economic markets from the market definition which Ofcom has proposed. There will be significant changes in the following ways:

- in leased line access markets, geographic market definition will be changed, possibly resulting in more geographic markets;
- There will be an additional dark fibre access market which acts as an input to the active leased line access market;
- for inter-exchange leased line products the geographic markets should be based on routes and not exchanges;

[163] Ofcom (2018), Business Connectivity Market Review Consultation, Volume 1 §7.48. Similar text was in the final decision, at §§8.59-8.60.

- There will be an additional inter-exchange dark fibre market (also based on routes).

7.68 Many of these markets are new and will require new and different assessment of SMP. Even where there is a more minor change in the economic market (e.g. the geographic markets in leased line access markets) market shares and other indicia of market power will change.

7.69 Notwithstanding the need for new SMP assessments for the changed market definitions, this subsection primarily responds to Ofcom's SMP assessment as set out in its consultation. This section does not cover the general principles by which Ofcom has assessed SMP, which are dealt with at section 4.3.2 above when WLA SMP assessment is analysed.

7.4.1 *Leased line access markets*

7.70 The first set of markets which need to be considered are those for leased line access. Ofcom has defined four such economic markets, which vary by geography but not by product set:

- the market for leased line access products in the CLA;
- the markets for leased line access products in other HNR areas;
- the market for leased line access products in Area 2; and,
- the market for leased line access products in Area 3.

7.71 The analysis below deals with Ofcom's proposed SMP assessment in each of these four markets.

7.4.1.1 *SMP assessment in the CLA*

7.72 In the CLA, Ofcom sets out that it finds Openreach to have a market share of 61-70% of new connections, and 51-60% of inventory[164], setting out that due to data issues from Virgin Media, the inventory shares are likely to be an underestimate.[165] It then sets out its estimate that the average business premises has 4.3 rival networks 'present'. A rival is defined as 'present' if it has network within 50m of 65% businesses in the postcode sector[166]. 46% of businesses have 5 or more rivals present, and 4% of businesses have no rivals present. 75% of rivals' new connections were provided on-net with the remaining 25% based on third party leased lines.[167] Of the 75% that were provided on-net only about 2% of these involved the digging of a customer extension.

[164] Share of new connections is a better measure of market share to use as an indication of market power. This is because the share of new connections reflects recent competitive conditions and so is a better indicator of future competitive dynamics than the stock of existing connections (which reflects historic competitive conditions over many years in the past). The only case where this might not be the case would be if the share of new connections was calculated over a short period of time and/ or covered an anomalous period.

[165] This feature is common to all of the inventory market shares.

[166] Based on Ofcom's calculations, with all businesses deemed to be located at the postcode centroid.

[167] All data in this paragraph are contained in V2 Table 8.3.

7.73 Based on this (V2 §§8.105-8.107) Ofcom states that it previously found, in BCMR19, that Openreach did not have SMP in the CLA, and it proposes that in WFTMR Openreach does not hold SMP for three reasons (V2 §8.107):

- Openreach on average "*will face competition from four rivals, which will either be connected to customer sites or requiring* [sic] *short network extensions*";
- Openreach's pricing behaviour – in particular that it has voluntarily reduced prices in the CLA in line with the price caps outside the CLA; and also that its internal pricing papers show it took account of competition in making its CLA pricing decisions;
- PIA will address Openreach's SMP. "*This constraint on BT is likely to increase further due to the prospects of network build in the CLA using PIA*".

7.74 Firms holding a market share above 50% will generally be found to be dominant through virtue of their ability to act independently of competitors and of customers. These three reasons come nowhere close, either individually or collectively, to being sufficient to overcome the strong evidence that a firm with a market share of this magnitude will be able to act independently, as set out below.

7.75 If Openreach did not hold SMP, it would be expected to lose market share to the 4.3 competing operators over time, and as existing customers left the market and new customers joined, those customers would be broadly equally likely to choose different leased line networks, reducing Openreach's market share over time. It would therefore be expected that Openreach's share of new customers would be in the region of 20-30% range, rather than the 60-70% which Ofcom has observed. This high market share therefore tends to support a finding of SMP and that there are not 4.3 effective rivals to Openreach. Indeed, a 60-70% share of new business implies that there is not even the degree of competition which would be expected from one broadly equally matched rival to Openreach.

7.76 The inference that Ofcom draws from there being four rivals within 50m of 65% of premises is irrational– Openreach has faced competition in the CLA from an average of four rivals for several years and its market share has stayed well over 50% and has possibly increased.[168] The obvious implication of this is that four rivals is insufficient to constrain Openreach's SMP.

7.77 There are several potential reasons why four rivals is insufficient to constrain Openreach's market power:

- even when a rival is within 50m they are unable to constrain Openreach due to the cost of build; the general barriers to building network extensions (as implied by the very low incidence of digging extension). As we describe above there is no evidence to support the use of 50m as the distance a rival will typically dig in practice;
- Ofcom's modelling of the distance between network and building underestimates the actual distance;

[168] On the basis that Openreach's share of new circuits is higher than its stock of existing circuits; this conclusion is tentative because of the aforementioned issues with Virgin Media data, which may have distorted estimates of Openreach's existing market share downwards.

- some of these rival networks lack the scale, credibility or reach to be an effective competitor; or,
- even when a rival is in-building it has other disadvantages versus Openreach.

7.78 The low incidence of on-net connections where digging is required (about 2% to 3% of all connections[169]) is consistent with altnets not being cost competitive with Openreach in situations where they have to dig to connect a customer.

7.79 It is notable that Ofcom's conclusions that rival networks have a constraining effect on Openreach in the CLA is in direct conflict with its findings about competition in the CLA in its analysis of passive infrastructure markets. Ofcom states at V2 §4.33 that:

> *We consider that BT is unlikely to face an effective direct competitive constraint from alternative telecoms infrastructure in [the CLA]*.

7.80 Given that there has been almost no usage to date of PIA in the CLA, and that Ofcom has made clear that there has been limited additional build of infrastructure in recent years in the CLA, this paragraph makes clear that existing infrastructure is insufficient to impose a binding competitive constraint on Openreach.

7.81 The evidence about prices being the same as, or lower than, those in the rest of the UK says nothing either way about whether Openreach holds SMP. The mere fact that Openreach has reduced its prices does not imply no SMP, since even total monopolies with 100% market share reduce prices (for example, in response to underlying cost changes). Similarly, the fact that Openreach responds to competition does not demonstrate that Openreach does not hold SMP, but rather that competition has some effect on Openreach's behaviour.

7.82 The level of prices is only indirectly relevant to the question of SMP. It is the margin earned by Openreach that is relevant, along with whether the price reductions in CLA have reduced margins to competitive levels. Ofcom has not demonstrated that the price changes have resulted in margins being at competitive levels:

- Ofcom has conducted no analysis of the cost Openreach faces to supply leased line services in the CLA relative to other parts of the UK. If it is cheaper to supply in the CLA than in Area 2 or Area 3, then setting the price at the same level, or even cheaper, may be consistent with Openreach holding SMP in the CLA, as a provider facing competitive constraints would set an even lower price. In the absence of this cost analysis there is no way to draw any conclusions from price data alone, as Ofcom correctly noted in BCMR19[170].
- Ofcom could have undertaken analysis of the relative prices charged for leased line services by Openreach and by other leased line providers. Such analysis may be instructive regarding whether or not Openreach has SMP in the CLA, particularly since its economies of scale and scope mean that the average cost to supply is likely to be lower for Openreach than for other operators. If Openreach's prices are higher for similar leased line products than those offered by other operators in the CLA, this

[169] All data in this paragraph are contained in V2 Table 8.3.

[170] BCMR19 §6.164

is strong evidence that Openreach holds SMP, and that the higher prices reflect Openreach's SMP. However, Ofcom has provided no such evidence.

- Ofcom has not conducted any profitability analysis of the returns earned by Openreach from its leased line products in the CLA. On the basis of the CAT BCMR appeal, TalkTalk understands that this is because Ofcom considers it to be difficult to conduct profitability analysis, and to interpret the results of any profitability analysis which is undertaken. However, other competition authorities do not appear to have such problems, and regularly adopt profitability analysis; indeed, profitability analysis has historically been used by regulators in all industries in order to set price caps to provide a normal rate of return to regulated entities. There is an extensive literature on profitability analysis, including in its use to determine market power, which can provide guidance for Ofcom when conducting SMP assessment.[171]

7.83 The first two limbs of Ofcom's argument (that Openreach faces on average four rivals, and Openreach's pricing behaviour) do not establish that there is no SMP. Therefore, the last limb of Ofcom's case – that PIA use is likely to increase the constraint on Openreach – would need to show that PIA would, over the course of the control period, transform the threat from competition so that Openreach is sufficiently constrained to price at the competitive level.

7.84 Ofcom suggests that the extent of use of PIA is uncertain.

> *"Potential competition due to network build (including using PIA) is likely to add to the strength of competition in the CLA, HNR areas and Area 2 over this review period but the extent and location of this is uncertain. The main impact is likely to be densifying the presence of networks in these markets i.e. more rival networks can be close to customer sites and only require short network extensions. We set out our full assessment in Annex 7."* (V2 §8.91b)

7.85 We consider that there is insufficient evidence for Ofcom to reach a conclusion that PIA will have the transformative effect Ofcom claims. Ofcom vaguely refers to evidence about the use of PIA being contained in Annex 7. However, the information in Annex 7 provides little relevant evidence to support Ofcom's claim that PIA will have a transformative effect on the market in the CLA:

- None of the six MSNs listed (Table A7.1) are planning any significant build in the CLA and none of the three MSNs listed who are planning to use PIA (Table A7.2) are planning any significant build in the CLA.
- The data on use of PIA by leased line only networks (Table A7.4) is wholly redacted and there is no summary of what it indicates. We asked Ofcom to provide a summary of what it shows but Ofcom declined to do so[172]. Given the lack of use of PIA by MSNs in the CLA it seems reasonable to assume that there is little projected use of PIA in the CLA by leased line only operators.
- There was only one (unnamed) operator who said they had plans to roll-out in London (although not specifically the CLA) using PIA "*… the prospects of network*

[171] For example, see Oxera (2003), *Assessing profitability in competition policy analysis*, Economic Discussion Paper 6, at §§2.4-2.8.

[172] Letter Warwick Izzard to Andrew Heaney dated 1 May 2020

build in the CLA using PIA … For example, one stakeholder (✂) told us that they have plans to rollout in London"(v2 §8.107c). We suspect that this is a relatively small operator; in any case, rollout using PIA in parts of London outside the CLA would have no impact on SMP in the CLA.

- CityFibre, which is the largest MSN, has not announced any plans to roll out in any part of London, let alone in the CLA, despite an extensive list of over 50 towns and cities which have already been designated for potential network build.[173]

7.86 Thus it appears that PIA is unlikely to be significantly used in the CLA by MSNs providing leased lines or by leased line only operators. Furthermore, there are many reasons why PIA will likely have limited impact (in the CLA as well as elsewhere):

- as Ofcom itself accepts, PIA is not suitable to use for building customer extensions in response to orders and PIA will only be used for pre-build (i.e. densifying networks). The level of network densification has previously been limited[174] so it seems unlikely that significant densification will occur in the next control period. This will mean that the impact of PIA on competition will be limited, since PIA will be unable to reduce the marginal cost (or delay) of competing for a customer, except if densification increases the proximity of networks to customers, which will rarely be the case.
- most of the current interest in PIA is in using Openreach's poles, rather than ducts – however, poles are not suitable to be used for providing leased lines.
- using PIA involves breaking into Openreach ducts, requiring streetworks and permissions – this adds cost and delay to altnet plans which Openreach's own build does not experience.
- Ofcom accepts that altnets are still testing PIA (v2 §8.19) and so it will take time to improve PIA so that it can be used effectively. This is likely to limit its commercial impact in the next review period, as scale usage is unlikely to commence until improvements have been made and bedded in.
- PIA will not overcome the advantage that Openreach has from existing wayleaves since for the majority of wayleaves (those signed before December 2017), rivals will need to negotiate their own wayleave even if they plan to use Openreach's ducts[175]

7.87 We note that despite having the data available, Ofcom has not provided any analysis (particularly quantitative) of how PIA impacts the ability of rivals to constrain Openreach e.g. percentage reduction in overall costs or increase in returns and how much additional investment is made viable by this.

7.88 Ofcom claims that the three factors above outweigh the strong implication from market share evidence that Openreach holds SMP. We think that these factors are insufficient to overcome the market share evidence. Furthermore, we consider that there are a number of

[173] See, for example, https://www.cityfibre.com/news/cityfibre-reveals-36-towns-cities-benefit-full-fibre-rollout-accelerates/

[174] For example Ofcom says that from December 2017 there has been little investment in leased line networks (V2 §7.70). It follows that network densification– a subset of total investment– has been low too.

[175] This is because wayleaves agreed before December 2017 only permit BT's use of the relevant BT duct and not use by a third party

factors that strengthen the conclusion that Openreach holds SMP and explain why Openreach has been able to sustain high market share in the apparent face of significant competition:

- Openreach's strong brand, long-term contracts, and ubiquitous network;
- the economies of scale which come from Openreach holding the highest market share in UK leased line markets;
- the barriers to retail CPs using multiple leased line providers which result from cost duplication, coupled with all CPs having Openreach as an unavoidable trading partner;
- the lack of countervailing buyer power in the market resulting from Openreach's monopoly in large parts of the country.

7.89 Ofcom has conducted little analysis which would provide evidence to offset these factors, which taken together provide a strong indication of Openreach holding SMP. In particular:

- it has not assessed trends in Openreach's market share;
- it has not undertaken any analysis of Openreach's profitability in the CLA; and,
- it has not considered the impact of barriers to connecting customers even where there is a break-out point located within a short distance of customer premises.

7.90 As such, Ofcom has biased its conclusions by only seeking to assess evidence which supports its predetermined outcome.

7.91 Ofcom should remedy these failings and undertake more quantitative work on Openreach in the CLA. In particular, it should consider the profitability of Openreach's provision of leased lines in the CLA. Although it may not be possible to determine this profitability to a high degree of precision, Ofcom should be able to derive an approximate value. Where this value is well in excess of the cost of capital—for example, if sustained returns were over 15% versus a 8% cost of capital[176] – then Ofcom should consider that this shows that there is a lack of effective competition, indicative of SMP.

7.92 On the balance of the available evidence, Openreach is likely to hold SMP in the active leased line market in the CLA. However, it is only by Ofcom adducing suitable empirical data, and then analysing that data, that a firm conclusion can be reached regarding SMP.

7.93 Even if there were sufficient evidence to demonstrate that Openreach did not hold SMP on the basis of 'average' market conditions across the CLA (e.g. number and proximity of rivals, market share) then Openreach may still be exploit customers in pockets within the CLA. This is a genuine risk in the case of the CLA since due to Ofcom's geographic market approach[177] there is substantial heterogeneity of competitive conditions in the CLA with 4% of postcodes having no competitors to Openreach, whereas 46% of postcodes have 5 or more competitors to Openreach.[178]

[176] BCMR 2019 WACC for access leased lines was 'Other UK Telecoms' WACC of 8.0%

[177] In particular the use of large postcode sectors and also the desire to define the CLA as a contiguous area with no 'holes'.

[178] V2 Table 8.3

7.94 In such a situation, Openreach will (absent regulation) have the ability and incentive to discriminate between customers in areas with different levels of competition – for example, raising prices to above competitive levels where competition is limited which it can do since it will be aware in which areas competition is weak[179]. In other words, Openreach will have market power, even if only in pockets of the CLA, and therefore it is necessary to find that Openreach has SMP in the CLA in order to be able to impose remedies to address this SMP[180].

7.95 Ofcom has not considered this possibility and should do so.

7.4.1.2 *SMP assessment in other HNR areas*

7.96 The market for leased line access circuits in other HNR areas is defined based on a methodology similar to that adopted for the CLA. As such, the comments in section 7.4.1.1 above are also valid when considering HNR areas.

7.97 The market shares found by Ofcom in HNR areas are similar to those in the CLA, although Ofcom finds that there are fewer rival networks present on average – 2.4 in other HNR areas versus 4.3 in the CLA.

7.98 TalkTalk agrees that Openreach is likely to continue to hold SMP in HNR areas in the upcoming control period. We do not agree that the SMP conclusion is 'finely balanced'; rather, on the basis of the data available to TalkTalk we consider it to be clear cut.

7.99 The slightly lower prices for 1Gbps ethernet circuits in HNR areas (V2 §8.102(a)) do not demonstrate anything about market power in and of themselves; Ofcom would need to assess the costs faced by Openreach in serving in these areas and/ or the prices charged by other network operators in order to reach any conclusion. Ofcom should take PIA into account in the same way as in WLA markets, by only taking into account the confirmed plans of leased line networks to use PIA, rather than assuming that PIA will have a competitive impact in locations where no network has drawn up plans to use it in the next control period.

7.4.1.3 *Area 2*

7.100 As set out above, TalkTalk disagrees that Area 2 is a properly defined geographic market for leased line access services. As such, this should not be a market in which Ofcom determines SMP, and Ofcom should reconduct its SMP analysis on the basis of a more appropriately defined market.

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[179] This knowledge will come, for example, from the proportion of bids for leased lines which it has won in previous years, along with the public nature of other leased line networks' build, due to a need for streetworks permissions to be obtained, requiring public consent, and that leased line networks will require manholes in the street through which they can be accessed.

[180] TalkTalk is not suggesting that Openreach will hold SMP *throughout* the CLA, but rather that BT will hold SMP in some parts of the CLA. However, because Ofcom has defined the CLA in such a way that there are areas of no or limited competition it is necessary to find SMP in the whole of the CLA since a SMP finding cannot apply to part of a geographic market.

7.101 However, if Area 2—with the boundaries as set by Ofcom– were a properly defined economic market for the purposes of SMP assessment, TalkTalk considers that Openreach would clearly have SMP in this market. Openreach's share of new connections, at 70-80% is extremely high, and well into a range which would usually lead to a finding of dominance; the (less reliable) stock market share of 50-60% would also be consistent with an SMP finding. TalkTalk agrees with V2 §8.97 of Ofcom's consultation that Openreach holds SMP on the basis of Ofcom's geographic market definition.

7.102 In addition, there is unlikely to be significant additional competition in this market over the course of the regulatory period. Many business premises taking leased lines will be outside the areas which MSNs roll out to: [✂].

7.103 Further, even where MSN networks offer leased line access services the constraint they impose on Openreach's market power is likely to be limited. First, they may not have network break-out points sufficiently proximate to customer demand to be competitive against Openreach. Second, they face other non-network barriers to competing: the inability to offer improved quality over existing Openreach leased line products; business customers' conservatism and resistance to change; need for new operators to build credibility through a track record over an extended period of time; and, the low portion of circuits that can be competed for each year. These factors are discussed in more detail at §7.116.

7.4.1.4 *Area 3*

7.104 As the Ofcom data set out in V2 Table 8.3 shows, Area 3 is essentially a monopolised market, with Openreach holding market shares of above 80% on the basis of both inventory and new contracts, and no realistic prospect of meaningful entry (V2 §8.94). It is inconceivable that Openreach does not have SMP in this market.

7.4.2 *Dark fibre access*

7.105 As Ofcom has not defined dark fibre access markets, TalkTalk is unable to comment in detail on the indicia of market power in these markets, as Ofcom's consultation does not present any data on them.

7.106 However, we consider that in general SMP in dark fibre markets is likely to follow SMP in active leased line markets, as most dark fibre circuits are self-supplied for use in active leased line circuits and factors such as barriers to entry, customer behaviour and countervailing buying power are similar. We therefore expect that SMP findings in dark fibre access markets will be similar to those in the corresponding leased line access markets. However, Ofcom should adduce up-to-date information which enables it to reach a robust conclusion on the basis of strong evidence.

7.4.3 *Inter-exchange leased lines*

7.107 TalkTalk agrees with much of Ofcom's general approach to determining SMP in IEC markets (V2 §8.111):

- we agree with the use of the number of competing networks as the main indicator of competitive constraint;
- we agree that only PCOs should be counted when determining the relevant competitive constraint;
- we agree with counting both directly and indirectly connected PCOs at an exchange in situations where there is already an indirect connection by that PCO to the exchange, therefore demonstrating that the PCO is a viable competitor at that exchange;
- we agree that nearby PCOs (but not directly and indirectly connected PCOs) should not be taken into account in SMP determination.

7.108 However, as we described above, the geographic market definition should be based on routes not exchanges. If each relevant market is defined by route then TalkTalk agrees that a BT+2 threshold is appropriate for there to be no SMP found. With Openreach and two credible competitors on a route, CPs are likely to see reasonably competitive conditions when procuring their leased lines. Where there is no rival or only one rival on a route (i.e. BT+0 or BT+1) then there will be SMP.

7.109 However, if Ofcom chooses (incorrectly) to retain an approach of geographic markets based on exchanges, then it should find SMP on routes between BT+2 exchanges. This is because there will be routes between BT+2 exchanges where there are no rivals or only one rival who can provide a circuit (since the rivals are different at each end) and therefore on these routes Openreach will hold SMP. Thus, it will be necessary to find SMP for all routes between BT+2 exchanges so that the SMP on some of the routes can be remedied. In essence the underlying problem is that basing geographic market on exchanges results in there being heterogeneous competitive conditions between routes. If Ofcom wishes to find that routes between BT+2 exchanges are sufficiently competitive, it should conduct quantitative analysis to demonstrate this, based on (for example) the proportion of contracts for inter-exchange circuits won by Openreach at exchanges with different numbers of competitors present.

7.110 SMP in the dark fibre inter-exchange circuit market will mirror that for leased lines inter-exchange circuits.

7.5 Business connectivity - objectives and approach to remedies

7.111 In this section we discuss Ofcom's objectives for the leased line sector and the appropriate approach to remedies in that market. In the following sections we provide our view on the appropriate remedies in each of the economic markets.

7.5.1 *Ofcom's objectives in leased line access markets*

7.112 The remedies should reflect Ofcom's underlying objectives. Ofcom has outlined the same dual objectives for leased line services as for WLA networks – specifically to promote investment in fibre networks (i.e. in this case leased line networks) and to protect customers:

- In area 2 Ofcom states that it "*propose[s] to exercise our discretion in setting these controls in favour of an approach that supports investment in fibre networks through promoting network competition, while protecting consumers from excessive pricing or a loss of retail competition in the short term*" (v4 §1.4)
- And in area 3 that, "*we propose to exercise our discretion in setting these controls in favour of an approach that sets appropriate incentives for BT to invest in fibre networks, while protecting consumers from excessive pricing (including through a weakening of retail competition*" (v4 §2.6)

7.113 We agree with the objective of protecting consumers from excessive pricing or weakened retail competition.

7.114 However, although we agree with the objective of promoting FTTP networks, we disagree with Ofcom's implicit objective of artificially promoting investment in leased line fibre networks[181]. Investment is a means to an end not an end in itself. Ofcom has provided no explanation of why it wishes to promote investment in leased line fibre networks or the consumer benefit from such investment will be. Neither has Ofcom tested whether any consumer benefit resulting from more investment is likely to outweigh the costs in terms of higher prices or unavailability of DFA that Ofcom is proposing in order to stimulate such investment.

7.115 There are material benefits to promoting investment in FTTP broadband networks, since the current availability of such networks is low. FTTP broadband will deliver significantly improved quality in terms of higher broadband speeds and increased service reliability, as well as strengthened competition when networks are built by altnets. The prospect of altnet FTTP investment is, as Ofcom notes, a key driver of Openreach's incentives to invest in these higher quality networks.

7.116 However, the same is not true for leased line networks, so Ofcom is wrong to attempt to elide the benefits of an additional leased line network with the benefits of an additional FTTP network. Additional leased line networks will deliver much lower quality or competition benefits than additional FTTP networks since Openreach already has a nationwide leased line fibre network:

- the presence of existing leased line networks, both ubiquitous from Openreach, and from competing networks in many parts of the country, will mean that there are few if any quality improvements from additional leased line networks.
- the competition benefit will be small since in practice an additional leased line network tends to have limited competitive impact; this can be seen from the low market share obtained by competing leased line networks – the market share of competitors is a good proxy for their competitive impact. For example, in the CLA, despite the presence of 4.3 rivals to Openreach within 50m of 65% of large businesses, Openreach still holds over 60% market share and each rival (many of which have been present for ten or more years) has on average only an 8% market share. In contrast, altnets' plans imply each FTTP network taking around 30-50% market share within 5 years in areas in which they have rolled out an additional FTTP

[181] TalkTalk presumes from v4 §2.6 that Ofcom does not intend to promote competitive investment in leased line fibre networks in area 3.

network. The far higher share an additional FTTP network obtains implies that it has a greater competitive impact than an additional leased line network. There are several reasons for this greater competitive impact:

- in the case of FTTP there are large scale ISPs (e.g. Sky, TalkTalk, Vodafone) who can switch their customer bases to new networks *en masse* once an alternative FTTP network is available. This is not the case for leased lines;
- there is less potential for product differentiation given that on average two networks exist already;
- business customers are more resistant to change in their services as shown by longer contract periods and low churn;
- to win enterprise customers, networks require vendor credibility and therefore a track record of successful provision of business grade services for an extended period of time; and,
- entrants have to overcome the cost and delay of extending their networks into buildings, which can be exacerbated by wayleave issues.

7.117 Furthermore, the majority of these type of quality and competition benefits for leased line customers can be achieved through a dark fibre remedy. As we describe in section 7.5.3, the net benefit from dark fibre based leased line competition is much greater than from network based competition. This is because dark fibre based competition allows many more customers to enjoy benefits than competition based on active leased lines; avoids inefficient network duplication[182]; and, can be achieved without inflating leased line prices.

7.118 Therefore, there are minimal benefits from promoting leased line network investment – accordingly, Ofcom's objective to promote leased line network investment is misplaced and not in consumers' interests given the likely cost of encouraging more investment.

7.119 Though TalkTalk raised these critical differences between FTTP and leased line networks (and the implications for appropriate objectives) in its July 2019 response Ofcom has not engaged at all with this important issue or responded to it in any way. TalkTalk hopes that these points will be addressed properly by Ofcom, so that the benefits of additional leased line networks can be robustly understood.

7.120 Ofcom's approach is also inconsistent with European legislation. The EECC[183] (which Ofcom expect to be implemented in the Communication Act prior to the final decision[184]) discusses the role of high capacity networks such as leased line networks:

[182] In practice, for any particular circuit entrants have higher costs than Openreach since they have lower economies of scale and will face higher duct costs (even in the presence of PIA); thus if they enter the market costs rise above the efficient level. Raising wholesale prices allows them additional revenue to cover their higher costs. Thus higher prices and inefficient costs go hand-in-hand.

[183] Directive establishing the European Electronic Communications Code 11 December 2018 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2018:321:FULL&from=EN

[184] V1 §2.19

Article 3(2)(a): "promote connectivity and access to, and take-up of, very high capacity networks, including fixed, mobile and wireless networks, by all citizens and businesses of the Union;"

Recital 23: " The regulatory framework should, in addition to the existing three primary objectives of promoting competition, the internal market and end-user interests, pursue an additional connectivity objective, articulated in terms of outcomes: widespread access to and take-up of very high capacity networks for all citizens of the Union and Union businesses

Article 3(2)(b): "promote competition in the provision of electronic communications networks and associated facilities, including efficient infrastructure-based competition, and in the provision of electronic communications services and associated services"

7.121 Ofcom's approach of setting high wholesale prices and limiting DFA availability to promote leased line network investment is incompatible with this legislation:

- There is no objective to promote additional network investment. Rather the requirement is for "*widespread access*" and the UK already has nationwide access to leased line network;
- Setting prices above cost will deter take-up and encourage inefficient investment[185] both of which are contrary to the EECC;
- Restricting DFA availability will deter take-up, encourage inefficient investment and limit use of higher capacity services, again contrary to the EECC.

7.5.2 *Impact of increased wholesale leased line prices on investment*

7.122 Ofcom has proposed that in the majority of the UK leased line prices will be indexed at CPI+0% in order to stimulate network investment. This will mean that leased line prices will be set materially above Openreach's costs, with the gap between costs and prices rising over the course of the control period. Below we discuss the impact of this approach: first, we discuss the impact on the level of leased line network investment, and second on FTTP network investment.

7.5.2.1 *Impact of increased wholesale leased line prices on leased line network investment*

7.123 Even if there were material consumer benefits from additional leased line networks (which, as we explained above, is not the case) it should be recognised that network investment levels are likely to be relatively insensitive to setting higher wholesale prices in this market review period. There are a number of reasons for this.

7.124 Investment in competing leased line networks is demand led, as a network is only usually extended in response to a firm order for a circuit[186]. This means that rivals' decisions on whether to invest in their own networks or rent from the Openreach network are made on a circuit-by-circuit basis, comparing the cost of building to the cost of buying. Therefore, the

[185] Raising Openreach's prices above Openreach's costs will attract entry by operators with higher costs than Openreach

[186] Ofcom agrees with this. See §A17.52, V2 §6.55, §6.82

impact on investment levels resulting from a higher wholesale price will depend on how many circuits that were otherwise unviable become viable for investment as a result of the higher price i.e. the build cost becomes less than the buy cost.

7.125 In practice for leased lines, few circuits that were otherwise unviable will become viable as a result in higher prices. There are several reasons for this:

- Currently, only about 2% to 3% of new connections[187] are dug (i.e. on-net connections where streetworks are required) which is consistent with altnets not being cost competitive with Openreach. Given that PIA will not be suitable for use for customer extensions it is unlikely that this cost disadvantage will materially change.
- Few circuits are retendered or new for tender each year given the long contracts prevalent in business markets, and that many firms choose to renew with existing suppliers without even retendering;
- Some altnets, even if they are within a short distance of a customer premises, will be unable to compete for some of these circuits given that they lack sufficient credibility and track record (particularly the newer MSNs) to be viable options;
- There is a wide variance in build costs, reflecting the wide variance in dig distances from network flexibility points to customer premises, whereas the rental price is the same irrespective of length. Assuming a typical distribution of costs (such as a normal distribution) then the wide variance in build costs will mean that an increase in rental costs will only result in a few circuits becoming cheaper to build than rent;
- Any price rise will only directly affect prices and margins for the market review period 2021-26, whereas investors will consider profitability over the whole asset lifetime;
- The areas and circuits that are most amenable to leased line network investment (since they have the highest potential returns due to, say, higher customer density) are already served.
- Fibre network build is subject to capacity constraints which will in the medium term somewhat reduce the elasticity of network investment to higher prices.

7.126 The low sensitivity of investment to wholesale price levels is evidenced by investment levels over recent years where though Ethernet prices, particularly for VHB circuits, have been substantially above cost there has been limited investment by altnet leased line providers[188]. This also suggests that there are few viable opportunities for efficient network build.

7.127 Thus increased wholesale leased line prices will result in little additional leased line network investment.

7.5.2.2 *Impact on FTTP network investment*

7.128 Ofcom has claimed that a reason to raise wholesale leased line prices (aside of encouraging leased line network investment) is that it will improve the viability of multi-service network

[187] All data in this paragraph are contained in V2 Table 8.3.

[188] For example Ofcom says that from December 2017 there has been little investment (V2 §7.70)

investments and so indirectly result in greater FTTP network investment (which can lead to consumer benefits, albeit in a different market). We refer to this the 'indirect FTTP investment effect'. Ofcom states:

> *"Being able to realise economies of scope, in particular by using the network to sell leased lines, can also significantly improve the viability of the entry case" (V2 footnote 281)*
>
> *"Where operators are looking to deploy multi-service networks, we have evidence to suggest that leased lines could still play an important role in enabling the business case for investment".* (V3 §6.23)

7.129 In common with much of Ofcom's consultation these claims lack any evidential support and are mere assertions. It is also telling that Ofcom's language is vague and seems unsure of the impact since it uses words like "*suggest*", "*could*" and "*play important role*".

7.130 TalkTalk asked Ofcom explain what "evidence" it refers to in §6.23, first sentence, and by how much it affects the business case for investment. Ofcom's reply was:

> *We are referring to the evidence we gathered for the 2018 WLA Statement, as well as more recent evidence gathered as part of the WFTMR. This evidence is summarised in the remainder of paragraph 6:23: "Building a fibre network involves a significant amount of upfront investment, and there are economies of scope (and scale) in building a network to deliver both broadband and leased lines. Using the network to generate as many different revenue streams as possible will help de-risk and improve the commercial business case for investment. Requiring Openreach to offer dark fibre will undermine rival network operators' ability to do this."*

7.131 This provides no assurance that Ofcom has any evidence of the impact of higher wholesale leased line prices on FTTP network investment. Rather the opposite – all this refers to is the bland observation that more revenue for an MSN increases returns. The question is by how much higher revenue increases returns, and how much more FTTP investment these higher returns lead to. Ofcom appears to have no evidence for that.

7.132 Further, it is unclear why Ofcom has resorted to unevidenced assertion when evidence is available to quantify the indirect FTTP investment effect. Ofcom has a MSN network model that could be used to test the impact of higher leased line prices on returns[189]. Further, as described below, it is possible to estimate the level of cost reduction due to cost sharing between leased line and FTTP networks.

7.133 We consider that there are clear and compelling reasons why the indirect FTTP investment effect will be limited.

7.134 For an increase in wholesale leased line prices to cause an increase in FTTP network investment requires two conditions to be met:

[189] Ofcom describes in Annex 17 its bottom up model for fibre networks. This model can be configured to estimate the revenues and costs of a leased line only network, FTTP only network or a multi-service network (i.e. leased line and FTTP). Thus it should be able to quantify the level of shared cost and the impact of leased lines on the profitability of an MSN.

- First, the higher leased line prices makes otherwise unviable leased line network investment viable. As we explained above leased line network investment is relatively insensitive to leased line prices;
- Second, the additional viable leased line network build makes the otherwise unviable FTTP network investment viable by reducing the incremental cost of FTTP network deployment. This mechanism can only occur if there is significant shared cost between leased line network and FTTP networks.

7.135 Cost sharing occurs where the cost of building a joint FTTP and leased line network is less than the cost of building each network separately. The main area of shared costs between FTTP and leased line networks is passive assets such as duct and fibre.

7.136 However, in this case the level of shared cost is low – this conclusion is consistent with Ofcom's view that FTTP products and leased line products are in different markets due to lack of supply side substitution (V2 §6.55, §6.82). For there to be supply side substitution a provider of leased lines products would be able to supply FTTP products (or *vice versa*) with little additional cost i.e. there would be high shared cost. Ofcom's conclusion that there is no supply side substitution – a conclusion TalkTalk agrees with – implies that there is limited shared cost.

7.137 There are a number of reasons as to why the shared cost is low:

- The absolute quantum of leased line network investment is substantially less than an FTTP network – probably about 6% of the total investment[190]. This significantly limits the potential level of shared cost – for example, even if all the leased line duct could be used by the FTTP network the absolute maximum saving would be less than 6%
- The two networks are often in different geographic areas meaning few passive assets can be used for both networks – for instance, FTTP in residential areas and leased lines in CBDs and business parks[191].
- Sharing of passive assets is further restricted due to other factors:

[190] The proportion of WLA and CISBO assets for the whole market provide a reasonable proxy for the ratio of FTTP and leased lines assets (we estimate these at 85%:15% based on Openreach RFS data). An entrant is likely to win a higher share of the broadband market than of the leased lines market (40% versus 10%) – see §7.116 above for explanation. We could assume that the leased line and WLA asset per circuit for altnets is the same as Openreach. We have conservatively assumed that for altnet, the leased lines the asset per circuit is 50% higher than Openreach reflecting that the lower market share for leased lines (10% for leased lines versus 40% for FTTP) will lead to diseconomies of scale. In practice, altnets are likely to cherry pick areas/customers to build leased lines and serve lower than average cost customers. Therefore, we can calculate that leased line assets are about 5% of the total entrant assets (WLA: 85% x 40% = 0.34; leased lines: 15% x 10% x 1.5 = 0.022) or put another way leased line assets are about 6% of FTTP assets. For the shared cost calculation here it is the ratios of assets that matter not the absolute amounts

[191] Ofcom considered similar point for IEC versus leased lines and found separate markets since the demand was in different areas (V2 6.91a)

- ducts used for FTTP networks are microtrenched or buried (V2 §4.8) which are less suitable for leased line networks which are normally constructed so that additional fibre can be blown through[192];
- the part of a FTTP network that is built using poles cannot be shared with leased line networks since leased lines are not carried on poles due to higher fault levels for pole carried lines;
- if an FTTP network wished to share ducts with a leased line network it would incur higher costs since leased line networks require cables to be laid deeper for added fault resistance, reducing the economies of scope which could be realised;
- much of the total cost of leased line networks is due to customer extensions. It is difficult to share the costs of these with the FTTP network since they cannot be jointly planned in the initial design.

- The networks have different architectures – see Ofcom's consultation at V2 §6.82
- The network have different operational processes – see V2 §6.82. As Ofcom points out itself: "*different operational field forces may be needed to provide mass market broadband as opposed to leased lines, where there are fewer customers but provisioning and fault repair may be more complex.*"
- Ofcom's PIA remedies, by effectively enabling an altnet to share costs with Openreach, will enable many of the gains from any cost sharing without a need for an altnet to construct offer both FTTP and leased lines. This would tend to further reduce even the small gains which may exist given the various points earlier in this paragraph.

7.138 To understand the likely scale of potential cost sharing, we have created an indicative model to estimate the extent of sharing for a typical network. As with any model it is a simplification of reality and based on assumptions. This model estimates that the reduction in FTTP costs from sharing with leased line network is less than 1%. The result – that the potential sharing is low – would hold under a wide range of assumptions.

7.139 One way of conceptualising the potential for shared cost is to consider the potential for sharing of ducts and poles (which is the key area where sharing is possible). If a 1,000km FTTP network is required to cover a particular areas (e.g. a town) then based on the ratio of costs the length of the leased line network for the same area will be 65km[193]. The question is then if a leased line network was built (as a result of higher wholesale prices) how much of the 65km leased line network could be used by the FTTP network so reducing the length of FTTP network required. The key stages in that assessment are as follows – we have made

[192] §A7.4 "*In a leased lines only network, demand can vary as new customers are connected and existing customer demand changes and this means space to expand capacity is necessary (either through having spare fibres or space available in ducts to deploy additional fibres).*"

[193] This assumes that the CAPEX asset per km for leased lines is the same as asset per km for FTTP. It may be that it is higher for leased lines since deeper ducts, more spare capacity included, less use of micro-trench. If this was the case the length of the leased line network would be shorter and potential sharing less

reasonable estimates of assumptions for these where data is available but Ofcom may have data to make its own assumptions:

- How much of the leased line network is in business only areas: assume 40% reflecting that much of leased line demand is in CBDs and business parks[194]
- How much leased line network is pre-built: assume 40% – it will not be possible to share ducts constructed for customer extension since their location is not known at the initial build stage[195]
- How much leased line network cannot be used since FTTP network is using poles not duct: 20%
- This gives a potential amount of leased line duct network than can be shared with the FTTP network of 13km (= 65km x 60% x 40% x 80%)
- Thus the potential reduction in FTTP duct/pole is 1.3% (= 13km / 1,000km)
- Assume that 70%[196] of total build costs are duct/pole costs[197]
- Reduction in FTTP network build costs from cost sharing 0.9%[198]

7.140 Thus the level of cost sharing is small and would be remain small under a wide range of different assumptions.

7.141 As we explained above §7.134 this cost sharing benefit would only arise in the instance where the higher wholesale leased line prices resulted in an otherwise unviable leased line network build becoming viable (which is likely to be a small proportion of cases). Only in these cases would the higher wholesale leased line prices would result in reduced FTTP network costs. Assuming, optimistically, that the higher wholesale leased line prices led to 5% more of the UK being covered by leased networks by 2026 then higher wholesale leased

[194] See §A7.4 "*broadband only networks are deployed in largely residential areas whereas leased lines only networks will be deployed in areas with a density of businesses, such as city centre business districts and business parks*"

[195] If an altnet wished to share the same duct for FTTP and for leased line customer extensions then when it deployed the FTTP duct it would have to construct it in a manner where it could be shared e.g. different break-out points, larger bore, more spare fibre deployed, deeper trenches which would add cost (see §A7.4 bullet 3). It is unlikely that this would be viable since in most cases this added cost would be wasted since it does not know at the point of the initial build where customer extensions for leased lines will be required

[196] If PIA is used this proportion would be reduced since the total duct cost– whether through own build or use of Openreach ducts– would be a smaller percentage of the total cost.

[197] "*The Government has stated that road and street works account for 70% of the cost of fibre deployment*" House of Commons Library Briefing Paper, Number CBP 8392, 10 January 2020. Full-fibre broadband in the UK

[198] This does not take account of other factors that may further reduce the potential cost sharing e.g. leased line ducts more expensive to build (deeper, larger bore, shorter fragmented build, more permissions needed since busier areas) meaning that leased line network will be less than 65km; that if leased line duct are used for FTTP additional costs will be incurred (e.g. to provide more frequent break-outs

line prices would reduce FTTP network costs by about £4m[199]. This is negligible compared to the increase in retail prices above cost which will be about £510m – see §7.157 below.

7.142 [✂].

7.143 Finally, additional FTTP investment will not benefit leased line customers. Although Ofcom claims at V2 §6.10 that improved speeds might encourage switching of SMEs to FTTP services, this is in direct contradiction to Ofcom's market definition exercise, where it correctly found that FTTP services would not impose a competitive constraint on leased line products. This implies that there can be no more than marginal switching by SMEs. This accords with TalkTalk's expectations, which are that the combination of business conservatism and the vital nature of connectivity for modern businesses means that there will be little switching in practice.

7.5.2.3 *Overall impact of higher wholesale leased line prices on investment*

7.144 Therefore, we consider that higher wholesale prices for leased lines will result in few, if any, consumer benefits resulting from additional investment in either leased line networks or in FTTP networks:

- little additional leased line network build is likely and any that occurs delivers little consumer benefit;
- any additional leased line network build will have a very small impact on FTTP costs and viability due to the low level of shared costs and so there will be a negligible impact on FTTP network build.

7.145 Given the clear and significant harm from higher wholesale prices for leased lines being passed on to consumers, Ofcom should not promote network investment by setting high wholesale price caps. This is not to say Ofcom should actively discourage network investment –but rather that it should not harm consumers in order to artificially encourage leased line network investment. It should allow the market to evolve naturally, without artificial regulatory encouragement or discouragement by setting regulated prices at the competitive level.

7.146 We also note that at V2 §6.10, Ofcom sets out that leased lines can be an input into the provision of WLA services. Consequently, higher leased line prices will have the effect of retarding the development of WLA networks. Ofcom has undertaken no analysis to demonstrate that this effect will not be the dominant one, and that as such higher leased line prices will not actually reduce WLA network rollout.

7.5.3 *Impact of restricting dark fibre access*

7.147 We discussed above whether it was in consumers' interests for Ofcom to set high wholesale leased line prices in order to stimulate network investment. Below we consider whether it is

[199] If higher wholesale prices led to 5% more leased line network coverage then there would be leased line networks in towns/cities where there are 1.5m premises. The altnet FTTP capex is £297 per home passed (Ofcom estimate) and so the potential capex reduction is 1.5m x £297 x 0.9% = £4m. Note: the 5% figure is illustrative – we believe the real figure would be lower

in consumers' interests to impose a dark fibre access (DFA) remedy to meet Ofcom's objectives and/ or to alleviate the SMP that Ofcom should find Openreach to hold in the dark fibre market in the vast majority of the country.

7.148 Considering first the need to alleviate SMP in the dark fibre market, Ofcom has not proposed any remedy in the market for dark fibre in the access layer, as defined in section 7.2.2 above. Openreach's SMP in the dark fibre market cannot remedied through the use of PIA: unlike a DFA remedy, PIA will only allow for initial network construction (pre-build), as it is impractical for customer extensions (connecting a customer premises to pre-existing break-out points of a leased line network). Furthermore, the time taken to use PIA would be considerably greater than DFA, further reducing the proportion of circuits for which PIA would be suitable; and using PIA involves sinking far greater costs, therefore making it riskier for access seekers than using a DFA product. PIA is therefore a poor alternative to a DFA remedy, only relevant to a small subset of customers. Therefore, we consider that DFA is required to alleviate Openreach's SMP in the dark fibre market.

7.149 Ofcom explains that it does not propose a DFA remedy (except in Area 3 and on some IEC routes) to encourage additional leased line network investment – see V3 §§6.10-6.12 and §A13.25. However, as we justify above there is no material benefit from additional leased line network investment. Thus Ofcom's underlying logic to not impose DFA is incorrect. Furthermore, as we describe at §7.120 restricting DFA to encourage additional network investment is not compatible with the EECC. Below we explain why imposing DFA would deliver substantial consumer benefits.

7.150 Ofcom has identified that downstream competition based on DFA delivers significantly more benefits to consumers than competition based on active products (i.e. Ethernet and WDM). For example, at V3 §6.7:

> *Access to dark fibre would provide users with a more flexible input to downstream services. This has the potential to deliver several benefits:*
>
> *• users would be able to choose their own electronic equipment, enabling them to deliver services that better suit their needs and the needs of their customers;*
>
> *• users would be able to make efficient decisions on bandwidth upgrades based on the underlying costs of upgrades; and*
>
> *• users would be able to eliminate inefficient active equipment duplication;*

7.151 We think that there are other benefits such as: stronger incentives to innovate; and the ability to bring innovations to market more quickly.

7.152 These benefits arise since DFA opens up more of the value chain to competition and in particular allows more competition in the active equipment layer where the majority of leased line innovation occurs. By allowing more providers to innovate, competition will be strengthened through increased service and product differentiation. In short, DFA is clearly a superior remedy to active leased lines – therefore, wherever a downstream remedy is required DFA should be preferred.

7.153 Figure 7.4 describes the key effects on consumers in leased line markets of imposing a DFA remedy against a counterfactual of not imposing it.

Fig 7.4 Impact of introducing DFA on consumers

Without DFA	With DFA	% customers	Key effects on customers
Customers served using altnets leased line networks (35%)	Served on DFA instead (A1)	1%	• COST: Small reduction in innovation
	No change (A2)	34%	
Customers served using Openreach Ethernet (65%)	Most served on DFA (B1)	65%	• BENEFIT: Large increase in innovation and competition • BENEFIT: Cost efficiencies

7.154 The diagram shows that:

- in the no DFA scenario there are two groups of customers: those served on altnet leased line networks (group A, about 35% of customers in line with non-Openreach market share in Area 2) and those served using Openreach wholesale Ethernet products (group B, 65%[200]).
- if DFA were imposed, there would be a small reduction (around 1%[201]) in altnet leased line network build and so some customers would not be served via an altnet network and instead on DFA (A1).
- most of the group A would remain being served on altnet networks – because altnet build is insensitive to DFA availability, introducing DFA would mean that few would be affected.
- in a scenario where DFA was imposed customer group B would mostly be served on DFA instead of on active leased line/Ethernet products.
- the effects on each group are:
  - the impact on A1 is negative but small since they would benefit from almost the same innovation and quality benefits on DFA as on an altnet network since most innovation occurs in the active layer.
  - Group A2 would be unaffected.
  - Group B, which is the majority of customers (80%) will be positively and materially affected since they will enjoy the significant quality benefits of DFA-

[200] See V2 Table 8.3 which shows Openreach inventory share 50%-60%, an estimate which Ofcom considers is understated, along with a new connection market share of 70%-80%. In this analysis, it is assumed that Openreach's inventory share is 65%.

[201] From V2 Table 8.3: The current altnet share of new connections is 25% (BT 70-80%) and of these around 5% (those for which on-net digging is required in Area 2) are built i.e. each year altnets build a total of 1.25% of new connections. If it is assumed that new connections each year are 20% of installed base and that wide DFA availability halved level of on-net build would result in 1% lower altnet share of installed base by 2026 (=1.25% x 5 years x 20%)

based competition (versus Ethernet) and the elimination of inefficient active equipment duplication.

- In addition to these effects imposing DFA would result in all customers enjoying more effective competition, as the wider availability of dark fibre in the access layer leads to entry and a wider choice of providers in the downstream leased line market.

7.155 The net impact of this will be positive for customers: whilst a small group of customers (A1) will suffer a marginal detriment, a much larger group of customers (B) will enjoy significant benefits and the whole market will enjoy more effective competition. This conclusion holds even with very different assumptions for the impact of DFA.

7.5.4 *Summary on objectives*

7.156 Thus we consider that there is no economic or consumer interest case for promoting network investment either by raising wholesale leased line prices above Openreach's cost or withholding dark fibre access. The key reasons for this are:

- Higher prices will deliver little additional leased line network build; any build that occurs will deliver minimal consumer benefit; and will cause negligible additional FTTP build due to the low level of shared costs.
- Withholding DFA will deprive the vast majority of customers of the significant benefits of DFA (versus Ethernet), restrict competition in the retail leased line market, and advantage a small number of customer marginally.

7.157 Lastly, we note that even if there were some material benefit from additional leased line networks Ofcom would need to show that the putative benefits outweighed the certain harm from higher prices. Ofcom estimates that the cost over-recovery from higher wholesale prices in Area 2 leased line access products resulting from its CPI+0% indexation is over £540m for the review period[202] – this is likely to translate into end-user prices for all customers being about £510m[203] higher the level they would be if prices were based on cost. This is a considerable level of harm – proportionally the prices are further above cost than in WLA markets[204]. There will be further significant harm from consumers being deprived of the innovation and competition benefits of DFA being more widely available.

7.158 It is notable that nowhere in the main consultation document does Ofcom even refer to the level of cost and harm let alone attempt any analysis to identify whether the benefit outweighs the large and certain cost. Rather Ofcom makes claims such as: "*By proposing a CPI-0% cap we are protecting customers from excessive prices*" (V4 §4.6c); "*We consider that*

[202] Table A16.7

[203] This reflects 80% pass through to retail level for non-BT CPs (such as TalkTalk) using Openreach products. Prices of retail products from other operators (e.g. BT and Virgin) will increase due to the umbrella effect of Openreach's higher prices; the extent of the price rise that other operators will impose depends upon the cross-elasticity of demand between their products and those of Openreach but will be less than the price rise for non-BT CPs. We assume that pass through (of wholesale price increase) is 60% for BT and 48% for other networks (e.g. Virgin)

[204] This is due to both faster underlying reductions in costs in leased line markets than in WLA markets, and from Ofcom having never imposed cost reflective charge controls in 10Gbps leased line markets.

maintaining prices at current levels would provide adequate protection over the review period" (V4 §1.114). Ofcom does not explain how prices more than £510m above cost 'protect' customers in any meaningful fashion.

7.159 Ofcom should conduct a cost benefit analysis which includes a quantification of the additional leased line investment resulting from higher prices and the benefit it is likely to bring to consumers.

7.160 In the following sections we outline appropriate remedies in each of the geographic markets identified.

7.6 Leased lines access and dark fibre access - remedies

7.161 Ofcom has defined four geographic markets (CLA, HNR, Area 2 and Area 3) for leased line access products. Though we consider the geographic market analysis flawed we provide comments on the markets as defined by Ofcom since it is not yet clear what the appropriate market definitions would be if Ofcom corrected the flaws[205]. As described above we think there is a separate dark fibre access economic market – the geographic markets and the SMP findings for these are likely to be the same as for leased line access, as the vast majority of dark fibre is used for self-supply at present. Thus we discuss the appropriate remedies for the leased line access and dark fibre access markets. In all cases, it is appropriate to first consider remedies in the upstream market (i.e. dark fibre access) and then, in light of this remedy, what remedies are required in the downstream market (leased lines access). We first discuss the general approach and then particular remedies in each geographic market.

7.6.1 *General approach*

7.162 As we have described above, there is no material quality or competition benefit for consumers from additional leased line network investment that will outweigh the costs of Ofcom distorting incentives to promote additional investment (e.g. higher prices and limited DFA). Thus regulation should not be altered to encourage network investment – for instance, by setting prices above cost or depriving customers of the benefits DFA delivers.

7.163 In light of this there are three general principles that should be adopted in the design of remedies:

- where SMP exists and a remedy downstream of passive infrastructure market is required, regulation should be based on DFA not Ethernet. DFA will be effective in constraining Openreach's SMP in both the dark fibre and leased line markets[206]; and enhances innovation and competition. If SMP exists and Ethernet is considered necessary and appropriate to address this SMP, then DFA will be more appropriate as a remedy.

[205] The criteria to assign areas to CLA, HNR, Area 2 and Area 3 roughly correspond to the geographic market grouping criteria TalkTalk have proposed BT+3 or more, BT+2, BT+1 and BT+0 – see §7.51

[206] whereas an active leased line remedy would leave Openreach's SMP in dark fibre markets unconstrained.

- transitional regulation should be imposed on Ethernet products whilst the market migrates to using DFA. This could be along the lines of a price cap at cost for new circuits for one year (to allow time for CPs to be ready to consume and sell DFA based services) and on existing circuits for the remaining contract period (to protect customers already on leased line services and allow them to migrate[207]). After these transitional remedies had concluded, the price of Ethernet circuits would be uncapped.
- price remedies should be set to reflect the degree and type of SMP found. For instance, if there is SMP across the entire area (as in Area 2 and Area 3) charges should be cost based whereas if SMP has been found due to pockets of SMP then a prohibition of geographic discounts should apply.

7.164 We do not consider that adaptive regulation is appropriate in the business connectivity market. This is principally because the reason to impose adaptive regulation and thus allow higher prices post-entry is to encourage competitive network investment. However, as we describe above there is little benefit from competitive leased line network investment (unlike in WLA) and so higher prices are not justified. In addition, it would be practically more difficult to impose adaptive regulation in this market – this is because assessing whether a particular network is present in a postcode sector is more complex since it depends on the measuring whether the network is within 50m of business premises.

7.165 Table 7.5 sets out the different remedies for different levels of SMP.

Table 7.5: Suggested leased line access remedies

Remedy	SMP	Borderline SMP	Pockets of SMP (only)	No SMP
Obligation to provide DFA	✓	✓	✓	✗
Transitional remedies on existing Ethernet circuits	✓	✓	✓	✓(1)
General remedies (e.g. requirement to provide on reasonable request, accounting separation, EOI)	✓	✓	✓	✗
Prohibition on geographic discounts (within the market)	✓	✓	✓	✗
Price publication	✓	?	?	✗
Margin squeeze test	✓	✓	✗	✗
Cost based DFA charges	✓	✗	✗	✗

Note: (1) only in case where no SMP finding for first time

[207] Typical contract lengths are 3 to 5 years

7.166 Below we discuss the particular remedies in each economic market, reflecting the level of market power Openreach holds in each. Since the SMP finding is likely to be the same for leased lines and dark fibre we consider both together.

7.6.2 *Leased lines access and dark fibre access - CLA*

7.167 In the CLA the likely SMP finding is either SMP (albeit marginal) based on average conditions of competition across the CLA, or SMP in pockets within the CLA (which would tend to point to a flawed geographic market definition).

7.168 In the case of borderline SMP the regulation would be a package including an obligation to provide DFA but without any price cap in place, with margin squeeze testing protecting downstream competition.

7.169 If the SMP finding in the CLA is due to pockets of SMP then the remedies should be more limited, with no regulation of wholesale prices except that Openreach cannot discount prices within the CLA in order to meet competition.

7.6.3 *Leased lines access and dark fibre access - HNR*

7.170 In the HNR Openreach holds borderline SMP in the sense described above. Thus the appropriate package of regulation would be one including an obligation to provide DFA but without price caps being imposed on DFA pricing.

7.6.4 *Leased lines access and dark fibre access - Area 2*

7.171 In Area 2 there is clear SMP. In this case regulation should be focussed on cost-based DFA with transitional Ethernet regulation as the market migrates to using DFA.

7.6.5 *Leased lines access and dark fibre access - Area 3*

7.172 In Area 3 there is also clear SMP. In this case, as for Area 2, regulation should be focussed on cost-based DFA with transitional Ethernet regulation as the market migrates to using DFA.

7.7 Inter-exchange leased lines and dark fibre - remedies

7.173 As we explained above Ofcom has erred by defining geographic markets based on the level of competition at each exchange at the end of a route rather than the number of potential competitors on a route. Ofcom also erred by not defining a dark fibre IEC market. We describe below the appropriate remedies for the corrected geographic markets where Openreach has SMP –all routes where the market structure is BT+1 or BT+0.

7.174 The remedies imposed by Ofcom should be similar to those for access circuits: impose DFA where SMP exists; transitional regulation of Ethernet; and a pricing approach to reflect the particular market circumstances. This reflects that there is no material benefit from

additional leased line networks and so Ofcom should not be imposing any remedies to artificially encourage (inefficient) leased line network investment.

7.175 On routes where there is BT+1 or BT+0 cost-based dark fibre should be imposed whereas, assuming a no SMP finding on BT+2 routes then no remedies should apply except transitional regulation on circuits where no SMP applies for the first time[208].

7.176 In the case that Ofcom continues with its flawed approach of defining markets based on exchanges, then routes between BT+2 exchanges will have fewer than two rivals; Openreach may therefore have SMP and a remedy will be required.

7.8 Leased lines – DFA remedy design

7.177 Below we comment on a number of aspects of the design of the DFA remedy. Ofcom has only imposed DFA for access circuits in Area 3 and for some inter-exchange circuits. We consider that DFA should be imposed far more widely. The comments below apply in those additional cases.

- Removal of Ethernet regulation should be contingent on the introduction of suitable migration products and processes to allow customers to migrate from Ethernet to DFA with minimal cost and inconvenience.
- Ofcom proposes to impose a distance limit on DFA of 86km "*for reasons of quality assurance and product safety*" (V4 §6.42). There is no reason for regulation to impose any limit. If there are concerns about quality assurance (for instance lasers may be less effective over long distances) then it is a matter for the CP to decide on the maximum length they wish to operate, or alternatively if they wish to use more powerful network equipment. Similarly, matters of product safety are a matter for the CP and Openreach to resolve in line with relevant health and safety legislation and regulation. In setting regulation to address these issues Ofcom is overstepping its remit.
- Ofcom proposes an approach for the provision of new infrastructure for DFA based on three criteria (V3 §6.46). It then notes that in practice the impact of these criteria is that "*we expect that in most circumstances the same arrangements will apply for dark fibre as apply for active leased lines*" (V3 §6.52). We think instead that under the three criteria approach the obligation to provide new infrastructure for DFA should be the same as for active leased lines except in cases where a difference can be justified. This would reflect that there should be no difference in approach between the two products since the need for new infrastructure is exactly the same. This has several benefits: it– is already well understood; fosters regulatory certainty; reduces the potential for gaming by Openreach; and reduces the regulatory burden.
- Regarding the Right When Tested (RWT) charge (V3 §6.56), Ofcom has articulated that it is appropriate to apply it in certain cases but has not explained its view on the level of the charge. We consider that the charge should reflect the costs incurred. Ofcom should make clear how the charge should be derived.

[208] This would be limited to maintaining the same terms and conditions over the course of the remaining contract period

- Regarding cease charges Ofcom notes that Openreach can levy these to cover the physical activity involved in ceasing a DFA circuit (V3 §6.60). Openreach should consider whether a 'soft' cease could be conducted through a contract mechanism whereby the CP commits to not use the DFA circuit once ceased. This would avoid unnecessary cost.
- It appears that the QoS obligations are designed so that the thresholds apply to Ethernet and DFA together. If this is the case then we disagree with Ofcom's approach and there should be separate targets for each of Ethernet and DFA. If the thresholds apply to a basket containing both products then Openreach will have a clear incentive (and ability) to discriminate between the products by, for instance, degrading the quality on DFA in order to prevent deeper competition on its network.

8 Physical infrastructure market and PIA

8.1 This section comments on Ofcom's proposals on the physical infrastructure market:

- product market definition (section 6.1);
- geographic market definition (section 6.2);
- SMP assessment (section 6.3);
- and, lastly remedies (section 6.4).

8.1 Product market definition

8.2 Ofcom sets out its product market definition for the physical infrastructure market at section 3 of volume 2 of its proposals. Ofcom's analysis of this is brief and, in the main, appropriate.

8.3 Ofcom commences (V2 §3.4) by setting out the in the absence of regulation, it would expect competition at the retail level to be between vertically integrated providers, with no operator offering PIA products to third parties. TalkTalk broadly agrees with this in wholesale local access markets, where network build has been limited to date, where the incumbent operators BT and Virgin Media are vertically integrated, and where physical infrastructure access proposals might be an important enabler of rollout. However, we note that [✂], and was offered for wholesale to third parties, as were a number of early CityFibre locations. Notwithstanding this, TalkTalk agrees that for the next review period, PIA has the potential to play an increasingly important role in enabling competition between operators other than BT and Virgin.

8.4 In leased lines the situation is rather different. A range of leased line operators have rolled out across many areas of the country without any access to Openreach passive infrastructure assets, and many of these operators are not vertically integrated, offering products including dark fibre. This is shown on Ofcom's own figures in the 2019 BCMR, which demonstrated that on average there are two available leased line networks at each premises in the country, and greater competition than this in HNR areas and in the CLA. Although markets are not fully competitive, this does not reflect excessive costs of constructing leased line networks. Rather, there are significant barriers to entry due to customer reluctance to switch providers; together with significant problems around obtaining wayleaves to build over private land; and access to customer premises. None of these issues can be solved by remedies in the passive infrastructure market, which cannot be used for extensions into customer premises. It is unlikely that passive infrastructure access remedies will materially promote network build of leased line networks, as implied by Ofcom at V2 §3.4(b) – see §7.83.

8.5 TalkTalk therefore agrees that it is appropriate to focus on the extent of competition created by self-provision of infrastructure in WLA markets. We do not agree that this focus is necessarily appropriate in leased line markets; more detailed analysis is required to demonstrate this.

8.6 As such, we agree with Ofcom's conclusion in V2 §3.5, that it should focus on self-provision of PIA products, but only as it pertains to WLA markets. We disagree with this conclusion for leased line markets.

8.1.1 *Focal product*

8.7 Ofcom states at V2 §§3.9-3.12 that it proposes a focal market of access to wholesale telecoms infrastructure for deploying a telecoms network, in line with the 2019 PIMR statement.

8.8 TalkTalk considers that this focal market is too broad, as it is not the narrowest product market which Ofcom could have adopted. In particular, Ofcom should have had one focal market consisting of access to pole infrastructure, and another focal market consisting of access to duct infrastructure. Ducts and poles are significantly different for the purposes of rolling out telecoms networks– in particular, poles are generally lower cost to use, as no digging is required, but cannot be used in all cases (as Ofcom notes at V2 §4.25). For example, leased lines are not, and are unlikely to be, installed on pole infrastructure because of the increased risk of damage due to the line being exposed.

8.9 As there is the prospect that there may be asymmetries in the competitive constraints imposed between duct infrastructure and pole infrastructure, these two focal markets should be considered separately. We therefore do not agree with Ofcom's unsubstantiated assertion at V2 §3.11 that "*the underlying product [operators] would be making available to access seekers is broadly similar*". Differences between ducts and poles drive this dissimilarity.

8.1.2 *Demand-side substitution*

8.10 TalkTalk agrees with Ofcom's analysis of demand side substitution between telecoms duct and pole infrastructure, and other potential substitute infrastructures:

- we agree that non-telecoms infrastructure is an ineffective substitute for telecoms infrastructure, and will not act to constrain a SSNIP by a hypothetical monopolist;
- we agree that microwave (V2 §3.24), satellite (V2 §3.28) and fixed wireless (V2 §3.32) will not be effective substitutes for telecoms infrastructure. In all cases they are marginal technologies which will have limited competitive impact before 2026.

8.1.3 *Supply-side substitution*

8.11 TalkTalk agrees that there is no scope for supply-side substitution given the high fixed and sunk costs of entering telecoms infrastructure markets.

8.2 Geographic market definition

8.2.0 *Approach to geographic market definition*

8.12 Ofcom sets out at V2 §4.3 that it considers that the UK can be split into four broad geographic areas for the purposes of passive infrastructure geographic market definition:

- parts of the country where there is little telecoms infrastructure competing with Openreach ('Category A');

- parts of the country where Openreach faces competition from other multi-service networks ('Category B');
- parts of the country where there is a high presence of leased line infrastructure competing with Openreach ('Category C'); and,
- parts of the country where there is significantly more infrastructure than in category C ('Category D').

8.13 TalkTalk agrees that this is a broadly appropriate delineation in the event that there is a single product market including both ducts and poles. However, in a market solely defined as poles, it would make little sense to define Category C and D areas separately, as poles are not used for leased line infrastructure.

8.14 At V2 §4.8, Ofcom notes that future network build is likely to be substantially buried or microtrenched, and therefore unsuitable for access seekers. Although this is accurate, it is unclear why it is relevant. Ofcom has already noted (V2 §3.4) that in the absence of regulation, it would expect substantially all operators to be vertically integrated. It is therefore irrelevant whether it could be used by access seekers– under Ofcom's counterfactual, it would not be offered to them in any case. Ofcom should therefore disregard whether new networks are buried, microtrenched or ducted when conducting its market definition and SMP analyses.

8.15 TalkTalk agrees that there is no requirement for areas to experience '*perfectly homogeneous*' levels of competition in order for them to be categorised as being part of the same geographic market (V2 §4.12). However, a strong level of homogeneity is required; Ofcom cannot simply wish away the need for homogeneity, and it is most unlikely that the wide range of competitive conditions seen in each of the areas A, B, C, and D is such as to lead to a single, correctly defined, geographic market. We return to this issue below when considering Ofcom's analysis of the four markets which it proposes to define.

8.16 It is notable that although Ofcom notes (V2 §4.10) that investment could move areas between categories, it does not consider any prospect that increased investment could result in an area becoming effectively competitive at the network infrastructure level (whether defined as a single product market or multiple product markets). Ofcom should consider this, and set out what it considers would be required for there to be no SMP in PIA markets. This will help to reduce regulatory risk by anchoring market participants' expectations of the circumstances under which Ofcom would amend regulation.

8.2.1 *Geographic assessment*

8.17 Ofcom's primary point on geographic assessment (V2 §4.15) is that ubiquity is important for access seekers. TalkTalk generally agrees with this. However, this ubiquity is only required across the particular parts of a town or city where an access seeker intends to roll out its network. Access seekers may be able to use more than one physical infrastructure provider, as long as that provider covers a sufficient proportion of the UK to make it worthwhile incur the complexity costs of adding a provider.

8.18 [✂].

8.19 This has important ramifications for Ofcom's analysis and remedies:

- a broadband network operator focussed on residential customers will not care about network availability in CBDs or the centre of London, where there are few or no residential premises;
- a purely leased line network operator supplying business customers will only care about network availability in the CLA, other HNR areas, and various business parks. The extent of network availability in residential suburbs and rural areas will be of no importance;
- an operator only seeking to roll out an MSN network in urban areas in towns and small cities (such as CityFibre) will have very different 'ubiquity' requirements to an operator such as Gigaclear which is focussed on rural villages.

8.20 Ofcom has failed to reflect these different strategies at all in its analysis. Rather, it appears to have proceeded from the premise that all access seekers will want full national coverage. This is not the case. TalkTalk is not aware of any altnet which is planning a full national rollout, and Ofcom's geographic market delineations in WLA markets (which make clear that there is at least 30% of the country in which altnet investment is not expected) demonstrate that Ofcom also does not expect altnets to require full national coverage.

8.21 We therefore disagree with Ofcom's conclusion at V2 §4.23 that states that '*a ubiquitous infrastructure is likely to provide material advantages for most access seekers, regardless of scale and scope*'. If Ofcom means full national coverage by this, it is simply wrong- full national coverage will not be required by any access seeker. The extent of coverage which is required will vary from access seeker to access seeker: for a potential leased line access seeker, coverage of just the CLA, or of the CLA plus HNR areas, may be all that is required. Ofcom has provided no evidence to support this assertion, which conflicts with both logic and evidence set out elsewhere in its own consultation document.

8.22 TalkTalk agrees that Category A areas and Category B areas are likely to be sufficiently homogeneous to be treated as a single unit for competitive assessment (V2 §4.25). Access seekers wishing to roll out MSNs or broadband only networks are unlikely to only roll-out within the Virgin Media footprint; indeed, given the greater competition in Virgin areas, they are likely to some extent to seek to avoid overlapping with Virgin's DOCSIS network. Ubiquity across Category A and Category B is therefore likely to be important for a range of access seekers, which would need wider access to infrastructure than could be provided by Virgin Media's passive assets.

8.23 However, Ofcom then goes on to aver that conditions of competition are homogeneous between Category C and D areas and category A and B areas, despite the very different presence of networks in these areas. Ofcom's reasoning for combining Category C with A and B is given in V2 §4.31. Unfortunately, this reasoning omits important factors which reduce its relevance.

8.24 Ofcom's points in support of the homogeneity of competition between Category C and Categories A and B appear rather fixated on MSNs, which are likely to be of no meaningful competitive effect in the HNR areas which comprise most of Category C. Ofcom should demonstrate that MSNs have realistic plans to build in CBDs if it wishes to rely on them in order to argue that Category C can be grouped with Categories A and B. It is also insufficient

to find that an MSN plans to build in one CBD– Ofcom should find that such build is planned past at least the majority of premises in Category C in order to take the impact on MSNs into account. If MSNs plan to roll out in only a small proportion of CBDs, then it should either disregard MSNs, or redefine Category C to be more homogeneous.[209]

8.25 Ofcom's proposal to define Category D areas as being in the same geographic market as categories A, B and C is plainly wrong. Conditions of competition in category D areas, with many leased line networks present, are clearly significantly different from those in the monopolised category A. In large parts of the CLA, the majority of communications demand is for leased lines, and there is consequently little advantage to rolling out MSNs; [✂].

8.26 Overall, TalkTalk considers that the evidence Ofcom has presented shows that there are three relevant markets in which SMP should be considered:

- a single geographic market encompassing Category A and Category B areas;
- a second geographic market encompassing Category C areas; and,
- a final geographic market encompassing Category D areas.

8.3 SMP analysis

8.27 TalkTalk considers that, if Ofcom's market definition is adopted whereby all of the UK is in a single geographic market for physical infrastructure access, Openreach would clearly have SMP in this market (V2 §5.5). We agree that Openreach's network has a much wider spread than any other network including that of Virgin Media (V2 §5.10), meaning that using Openreach infrastructure will be more cost effective than using that of any other network. We agree that there are likely to be high barriers to entry into the market (V2 §5.18) and that there is no countervailing buyer power (V2 §5.22).

8.28 If Ofcom amends its market definitions to separate Category C and Category D areas from Categories A and B, there will evidently be scope to reach different conclusions on market power in these areas. However, it is immediately clear that, for the reasons set out in the preceding paragraph, Openreach will hold SMP in the market comprising Category A and B areas.

8.29 Openreach is also likely to hold SMP in Category C areas. It has the widest network in these areas, and the vast majority of demand is satisfied over its network for both leased lines and (less importantly) WLA products. Barriers to entry and expansion are high, and there will be no countervailing buyer power.

8.30 Category D areas– the CLA– is likely to have a somewhat more finely balanced SMP conclusion. While Openreach's network still satisfies over half of circuit demand in these areas, its market share is much lower than in other areas, and there is a greater range of competing networks. On balance, TalkTalk considers that Openreach will hold SMP in a category D market, in the same way as we consider that Openreach holds SMP in the CLA

[209] TalkTalk notes that CityFibre appears to be planning to roll out in very little of Category C, as it has no plans to roll out in any part of Manchester, Birmingham or Bristol.

market for active leased line circuits (see section 7.4.1.1 above).[210] However, the lesser extent of this SMP should perhaps be taken into account when determining the appropriate passive infrastructure remedies in the CLA.

8.4 PIA remedy

8.31 We agree with Ofcom's proposal to require Openreach to provide PIA nationally to remedy its SMP. Below we comment on a number of aspects of the remedy, particularly how to ensure that it quickly becomes effective.

8.32 High quality and easy to consume PIA has the potential to accelerate altnet FTTP roll-out and benefit consumers through:

- reducing the cost of FTTP roll-out, making FTTP build viable in more areas and lowering wholesale and retail broadband prices. Ofcom has suggested that upfront costs could be reduced by 50%[211] – this is a rather optimistic view, but nonetheless the cost reduction could be material;
- accelerating altnet network roll-out and reducing installation times since it is quicker to use existing assets than to install new ducts and poles;
- reducing disruption to the public.

8.33 Faster altnet FTTP build in more areas of the country will in turn drive Openreach to accelerate its FTTP roll out to compete with the new networks.

8.34 The current PIA product, which was first introduced in 2010[212], has seen some improvements and certain aspects (particularly access to poles) are working reasonably well for small scale roll-outs. However, the products are cumbersome, highly manual and costly for CPs to use (in terms of both manpower and time). For instance, [✂], a significant requirement for just one city and just one part of the roll-out process, which would imply a large staff time and cost impact for an altnet rolling out widely. Openreach does not have to use this same process and instead submits its orders for poles and duct using a superior process.

8.35 Improvement to date has been slow and arduous which reflects that it is not in Openreach's interests to have an effective PIA product – neither Openreach nor BT need to use PIA themselves, yet effective PIA will enable competitors to erode Openreach and BT market share and margins. In many ways, the situation is similar to the early days of LLU where progress in improving the product was very slow. The key change that resulted in LLU becoming a fit for purpose and industrialised product was imposing an equivalence of input (EOI) requirement, since it required BT/Openreach to use LLU products itself, creating a very strong incentive to improve those products.

[210] Note that although there are residential premises in the CLA, competition in the passive infrastructure market will be primarily dependent upon the various leased line only networks which are present in the CLA.

[211] WLA Market Review: Statement, March 2018. Volume 1 §1.28

[212] Ofcom (2010), *Review of the wholesale local access market: Statement*, 7 October

8.36 Absent an EOI requirement progress might be unacceptably slow and the UK will miss the opportunity for PIA to accelerate FTTP roll-out. Therefore we think that Ofcom should consider other remedies to ensure more and faster progress in PIA product development. These include:

- full transparency of Openreach's process for using its own ducts/poles (i.e. 'internal PIA') and publication of performance metrics (e.g. time to respond, error rates) for both internal and external processes. This will, absent EOI, allow CPs to identify where the (external) PIA process is inferior to what Openreach itself experiences and can therefore justify improvements (given Openreach's non-discrimination obligation);
- stronger and wider SLAs and SLGs which will create a greater incentive for Openreach to improve the PIA product;
- organisational separation of the unit providing PIA within Openreach;
- more involvement by Ofcom and the use of its soft power and hard power (e.g. using Direction-making powers) to drive product improvements; and
- greater oversight and audit by the OBARCC.

8.37 If meaningful progress is not made, Ofcom should impose an EOI requirement on all PIA products/processes– and Ofcom should be explicit in its determination that it may impose EOI through a Direction during the control period. The risk of EOI being applied should sharpen Openreach's focus on improving the product.

8.38 Lastly, we agree with the proposed reductions in pricing for the use of pole access. PIA has the greatest chance of success if prices are as low as possible (whilst allowing Openreach to recover its efficiently incurred costs).

9 Equality impact assessment

9.1 Ofcom's equality impact assessment is provided at Annex 10 of its consultation. This annex is a mere one page long, and there are effectively only two paragraphs containing Ofcom's 'analysis', one for wholesale local access markets, and a second for leased lines and PIA services.

9.2 The sum total of Ofcom's analysis for WLA services is as follows (§A10.5):

> *We regularly monitor the take-up and use of fixed line services by different groups within society. While this on-going research does show evidence of variation in consumption, we do not consider that the wholesale regulation proposed here is likely to have a disproportionate impact on any of the groups as our regulation is aimed at promoting competition across the range of services for all equality groups that rely on WLA.*

9.3 While for leased line and PIA services Ofcom states that (§A10.6):

> *We do not have detailed sectoral information on the businesses that purchase wholesale leased lines services or physical infrastructure services. However, given the nature of the services – core network services which support a variety of retail services – we do not have any reason to suspect that there would be a disproportionate impact on any of the above defined equality groups through modification of the regulation on these services.*

9.4 This alleged 'assessment' is clearly deficient on any serious analysis. Even within these two brief paragraphs there is a serious inaccuracy, and there are, of course, major omissions in Ofcom's analysis given its extreme brevity. This section sets out the problems with Ofcom's analysis, and that its finding that there is no impact on equality considerations is likely to be wrong.

9.5 Leased lines are sold to businesses rather than individuals. There is no sense in which a business can have protected characteristics with respect to gender, race, or other protected characteristics. As such, TalkTalk agrees that there is no impact on equality from Ofcom's proposals in leased line markets. Therefore, our comments regarding the EIA are regarding WLA services.

9.6 Ofcom's essential argument- indeed, the total of its analysis- can be broken into three elements:

- there is evidence of variation in consumption of different WLA services;
- the wholesale regulation proposed is unlikely to have a disproportionate effect on any equality groups;
- Ofcom's regulation is aimed at promoting competition across the range of services for all groups that rely on WLA.

9.7 It is disappointing that although Ofcom has stated that there is variation in consumption of different WLA services, it has not chosen to set out any of the data which it holds on this issue. It is difficult to respond meaningfully to a consultation when Ofcom chooses not to publish the underlying data on which it has based its decision, and it is unclear how this is consistent with Ofcom's duty to consult fully with stakeholders. It is unsurprising that there

is such variation; however, it is unclear in the absence of published data just how great this variance is at present.

9.8 More importantly, there is substantial evidence that conflicts with Ofcom's contention that the proposed wholesale regulation is unlikely to have a disproportionate effect on any equality groups.

9.9 An EIA has to be carried out with respect to a number of specified protected characteristics:

- disability
- gender reassignment
- marriage or civil partnership
- pregnancy and maternity
- race
- religion or belief
- sexual orientation
- gender
- age.

9.10 The question is therefore whether Ofcom's proposals act to disadvantage any group defined on the basis of these protected characteristics.

9.11 At the outset it is worth bearing in mind what Ofcom's policy represents, compared to a counterfactual of the current regulatory structure whereby prices for WLA products are set in line with the costs of Openreach as the SMP provider. Ofcom is planning to increase the prices of WLA products, in both Areas 2 and 3, so that they are above the level of Openreach's cost.[213] The aim of this increase in prices, which will impact voice customers, ADSL customers, and FTTC customers, is to incentivise the roll-out, and so increase the availability, of FTTP products.

9.12 The net effect of this is consequently:

- to disadvantage customers who continue to take voice, ADSL and FTTC products;
- to advantage customers who take FTTP products through choice; and,
- ambiguous for customers who are compelled to take FTTP products through copper-switch off provisions.[214]

9.13 Furthermore, it is important to note that FTTP products are, and are likely to remain, considerably more expensive than voice, MPF or FTTC products. [✂]:

[213] The mechanism for doing this is different in Area 2 and Area 3—in area 2, to simply set prices above cost irrespective of whether investment occurs, whereas in area 3 prices will only be in excess of costs due to actual Openreach build of FTTP or a suitable commitment by Openreach to build FTTP.

[214] Such customers may, or may not, have themselves chosen in time to take FTTP products, and may find that FTTP meets their needs better than copper-based products, or alternatively is no more advantageous at a higher price.

- [✂];
- [✂];
- [✂];
- [✂];
- [✂].

9.14 The price for 40/10 FTTC is currently £12.11 per customer month (£85.38 annually for the MPF base product, and £59.97 annually for the 40/10 GEA overlay). [✂]:

- [✂];
- [✂];
- [✂];
- [✂];
- [✂].

9.15 These are [✂].

9.16 [✂], it is highly likely that it is principally richer demographic groups that are more likely to be able or willing to take FTTP, and are therefore being benefitted by Ofcom's current policy. Conversely, poorer demographic groups are likely to remain on FTTC or even ADSL products for as long as possible, and are more likely to need to be compelled to upgrade to FTTP.[215]

9.17 This, then, raises the question regarding whether the presence of absence of the various protected characteristics impacts on the average earnings of people within them. There is strong evidence that it does.

9.18 First, consider ethnicity. Helpfully, the Office of National Statistics compiles data on average income by ethnicity, and selected data from its most recent release is set out in Table 9.1 below.

[215] Note that if an individual is compelled to upgrade to FTTP when they would rather continue to take an ADSL/ FTTC product, this creates a strong presumption that their welfare is reduced by the switch to FTTP.

Table 9.1: Average hourly income (£) by ethnicity

	Mixed	Indian	Pakistani	Bangladeshi	Chinese	Other Asian	Black	White British
2012	10.35	11.67	8.58	8.29	11.54	9.62	9.97	10.58
2013	11.43	11.55	8.32	8.00	13.11	9.22	10.40	10.76
2014	10.81	12.16	8.17	7.71	12.58	8.79	10.16	11.00
2015	11.08	11.70	9.26	8.95	12.83	9.06	10.00	11.11
2016	11.54	12.50	9.63	9.00	14.09	10.10	10.30	11.29
2017	10.91	12.82	9.63	9.11	14.68	10.42	10.91	11.55
2018	12.33	13.47	10.00	9.60	15.75	11.55	10.92	12.03

Source: Office of National Statistics, available at https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/ethnicitypaygapsingreatbritain/2018

9.19 As can be seen from this table, average hourly income varies widely between different ethnic groups, with Bangladeshi and Pakistani workers having the lowest average income, and Indian and Chinese workers having the highest average income. On average, Chinese individuals are paid over 50% more than Bangladeshis, with white British workers roughly in the middle of the distribution.

9.20 Taking a second protected characteristic, gender, a significant gender pay gap remains in the UK (albeit a much smaller gap than exists between different ethnic groupings). In the UK in 2019, the ONS reported that male workers were paid on average 8.9% more than female workers. Such a pay gap seems likely to have an impact on individuals' disposable incomes, and therefore on their propensity to take FTTP rather than other fixed line telecoms products.

9.21 Possibly the greatest impact from a protected characteristic comes from disability. The ONS reported that in 2018, disabled employees earned 12.2% less than employees without a disability.[216] However, more importantly, employment rates were massively different between disabled people and people without a disability. Of 16-64 year olds, 80.7% of non-disabled people were employed, compared to only 50.9% of disabled people. A combination of meaningfully lower pay with much lower employment rates is likely to result in disabled people, as a whole, having far lower disposable income than the UK average.

9.22 Consequently, it is clear that the protected characteristics are strongly correlated with earnings, which itself is likely to lead to those protected characteristics influencing customers' choice whether to take an ADSL, FTTC or FTTP product. Ofcom should therefore undertake a detailed investigation as to whether there are likely to be different rates of take-up of FTTP services by different protected characteristics. This investigation could encompass financial analysis (to ascertain whether FTTP is likely to be affordable by the different protected groups) and evidence on uptake to date (differences in propensity to take FTTP and/ or the highest available speed at their property). In the event that there are differences in expected uptake levels, resulting in a cross-subsidy from poorer protected

216 https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/disability/articles/disabilitypaygapsintheuk/2018

groups to richer protected groups, Ofcom should reconsider its proposals in light of these findings.

Annex

ANNEX

1 Network coverage threshold model

1.1 Below we provide additional explanation for TalkTalk's proposal for an economically based estimation of the network coverage threshold in WLA markets, as outlined in section 4.2.3.

1.1 Approach 1: Intuitive logic for why a 50% threshold is too low

1.2 Consider the limiting situation under Ofcom's current proposals where Openreach faces a fully competitive market structure in 50% of an area, and is a full monopoly for fixed line broadband in the other 50% of an area and sets the same price across the entire area.[217] This could be the case, for example, either if there is undifferentiated Bertrand competition between various FTTP networks in the competed half of the market, or if there are multiple competitors in the competed half.[218]

1.3 In essence at this point Openreach has to choose whether to set a competitive price, obtaining an overall market share of 75% across the whole area, or a monopoly price, obtaining a market share of 50%.[219] This reflects that if it sets the monopoly price, it will obtain a zero market share in the competed area; this directly follows from a linear demand curve structure with a meaningfully higher elasticity of demand in the competed area. The profit maximising price in the uncompeted area is above the price which equates to zero demand in the competed area.

1.4 The elasticity of demand facing Openreach in the uncompeted area will be low at competitive prices. This reflects the utility nature of fixed line broadband, which is near ubiquitous, with over 90% of premises taking the product.

1.5 Finally, it is assumed that Openreach cannot price differentiate within the given geographic unit being considered. If this assumption is untrue, and Openreach can price differentiate, then it is trivially true that 50% competitive coverage will be insufficient to constrain Openreach, as Openreach can simply set a higher price for the uncompeted premises than for the competed ones, and earn supernormal profits that way.

1.6 This then means that the effective question is—can Openreach earn higher profits from unconstrained pricing with 50% market share than with a competitive price for 75% market share?

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[217] Note that all of this section assumes that there is no regulation in place—not only price regulation, but also the price averaging obligations which Ofcom proposes to impose. This is the correct approach to adopt given the modified greenfield approach which Ofcom adheres to when conducting market definition and market power assessments. In such a case Openreach would be free to set whatever price it chose.

[218] It is not implausible that this situation could prevail in some areas. For example, where a postcode sector covers both an urbanised area, which has Virgin Media and CityFibre present, and a rural area, where only Openreach is present.

[219] If there are multiple operators in the area, rather than a single competitor, then Openreach's market share will be lower. For example, with two competitors in the competed region, Openreach would have a 67% market share (50% from the monopolised region, and one third of the remaining 50%). Openreach will gain all of the market share in the monopolised area, and then a 1/*n* share of the competed area, where *n* is the number of firms competing.

1.7 Modelling makes it clear that Openreach would be able to earn higher profits by setting a monopoly price in 50% of the area than attempting to compete across the whole area. This reflects the international evidence on what prices consumers are willing and able to bear for broadband when there are no competing operators and regulation does not impose binding price caps.

1.8 For example, consider the situation in the United States. In the US, large parts of the country are subject to a monopoly for broadband services, and there has been no local loop unbundling or other regulation which would have the effect of opening elements of the value chain to competition based on passive access. In its 2020 comparison of broadband pricing around the world, cable.co.uk found that the average monthly broadband price in the US was $50, while the price in the UK was $35.71. This implies that in areas which are approximately as competitive as the United States on average, there could be scope to increase prices by around £11 per customer per month, potentially slightly adjusted for any quality differences between UK and US services.[220] This compares to a monthly wholesale price for 40/10 FTTP of £12.11 in the upcoming financial year. That is, in the absence of regulation, Openreach would be able to nearly double its prices.[221] Whilst there may be other factors that could cause part of the higher prices in the US, such as higher costs to serve, their impact is likely to be relatively small, implying that the majority of the difference is caused by the lack of competitive pressure.

1.9 If Openreach were (conservatively) able to increase its prices by even 50% in an unregulated monopoly situation, and even if it had zero incremental costs of serving customers, then this would make it more profitable to monopolise 50% of the market than to compete in 75% of the market. Given that the comparison with the United States implies that price rises of well over 50% would be possible, and that there will be some network level costs to serve, this is consistent with Openreach finding it profitable to only compete in the monopolised areas.

1.10 As Ofcom increases the threshold for finding a competitor to be present in an area, the price increase above the competitive level which will be required in the non-competitive areas will increase. For example, in the case where Ofcom sets the threshold at 67%, with zero incremental costs to serve, then Openreach would need to be able to double its prices to earn the same level of profits by behaving competitively rather than as a monopolist. The evidence from the United States therefore indicates that at this kind of threshold, an altnet may represent an effective competitive constraint on Openreach.

1.11 This analysis is predicated on perfect competition in the competitive areas. In reality, however, Openreach is the incumbent operator in areas where CityFibre may enter, in a market where there are substantial switching costs at both the wholesale and retail level. In

[220] While US speeds are on average slightly higher than in the UK, there is also widespread use of download limits (“metering” in US parlance) in the United States, which rarely exists in the UK any longer. These two effects will offset, leaving the overall effect ambiguous.

[221] This is likely to be an underestimate for two reasons. First, in this example we are considering monopolised areas, whereas there is competition in some parts of the United States (albeit many areas are monopolised). The price in the monopolised parts of the US is therefore likely to be higher than the average price in the US. Second, the broadband services on offer in the US will be a mixture of copper, FTTC and FTTP services. As the relevant services in this case by the end of the regulatory period will be substantially FTTP services—and therefore higher speed—there is likely to be a higher consumer willingness to pay for them than a mixture of high and low speed services,

this context, the market will not be perfectly competitive even in areas where there are other operators; rather, Openreach will maintain some market power.[222]

1.12 This continuing market power will increase the appropriate threshold for Ofcom to set to constrain Openreach's market power. Any market power at all in the competed areas will make it more profitable for Openreach to increase the price across the geographical unit as a whole. As volume losses in the competed area fall, there is less need for Openreach to moderate its price rises, and it can come closer to adopting the prices which would maximise profits in the uncompeted parts of the market.

1.2 Approach 2: modelling the impact of price changes

1.13 It is also possible to address optimal prices directly, by considering a simple model which represents separate demand curves in the competed and in the non-competed areas, to consider Openreach's pricing incentives. This subsection sets out a stylised example; the spreadsheet model will be provided to Ofcom to allow Ofcom to adjust parameters as it sees fit. The detail in this section is more technical than in the rest of this submission; it is summarised below for readers not comfortable with economic modelling.

1.14 The model is normalised so that current prices are 10, and current revenue and costs in a particular geographic area are 1000.[223]

1.15 Initially, specify two demand curves. First, the demand curve in a competed area:

$$Q_c = 300 - 20p \ (eq. 1)$$

and then the demand curve in an entirely non-competed area:

$$Q_n = 120 - 2p \ (eq. 2)$$

1.16 Where Q_x is the demand, in units, in area x and p is the price.

1.17 This creates two linear demand curves which are additive to one another. They need to be weighted against one another based on the threshold which Ofcom sets for an area to be deemed to be competed by an entrant operator. Ofcom's current proposal is for this threshold to be set at 50%, so Q_c and Q_n are each weighted at 50% when determining total demand across an area.[224]

[222] Note that this does not presume how much market power Openreach has, merely that it retains some ability to set prices above the competitive level without losing all of its customer base. Even the ability to set prices 3% above costs will significantly impact the appropriate threshold for Ofcom to set.

[223] This does not impact the results, as these are homogeneous of degree zero.

[224] Note that the model is independent of the number of operators in the competed area. In practice, this should not matter greatly; the core dynamic of the model is that there is an area which is uncompeted and which therefore has inelastic demand, while demand in competed areas is considerably more elastic. It can also be generalised to a three operator model, where there are areas with two, one and zero competitors. However, in this instance the demand curve in the area competed by one operator would need to be made more inelastic than the competed zone in the two area case, particularly given the vertical integration prevalent in the broadband market.

1.18 Once added together, a kinked demand curve is created. Over a range of prices from zero to 15, the total demand curve is:

$$Q = 210 - 11p \ \ (eq\ 3)$$

1.19 Whereas for prices above 15, the total demand curve is simply the demand curve from equation 2: $Q = Q_n$.

1.20 The cost curve is as in equation 4:

$$C = 700 + 3Q \ (eq. 4)$$

1.21 On the basis of these equations, profits are initially zero. This is assumed because the question being addressed is whether Openreach would find it profitable to increase prices by at least 5-10% above the competitive level.

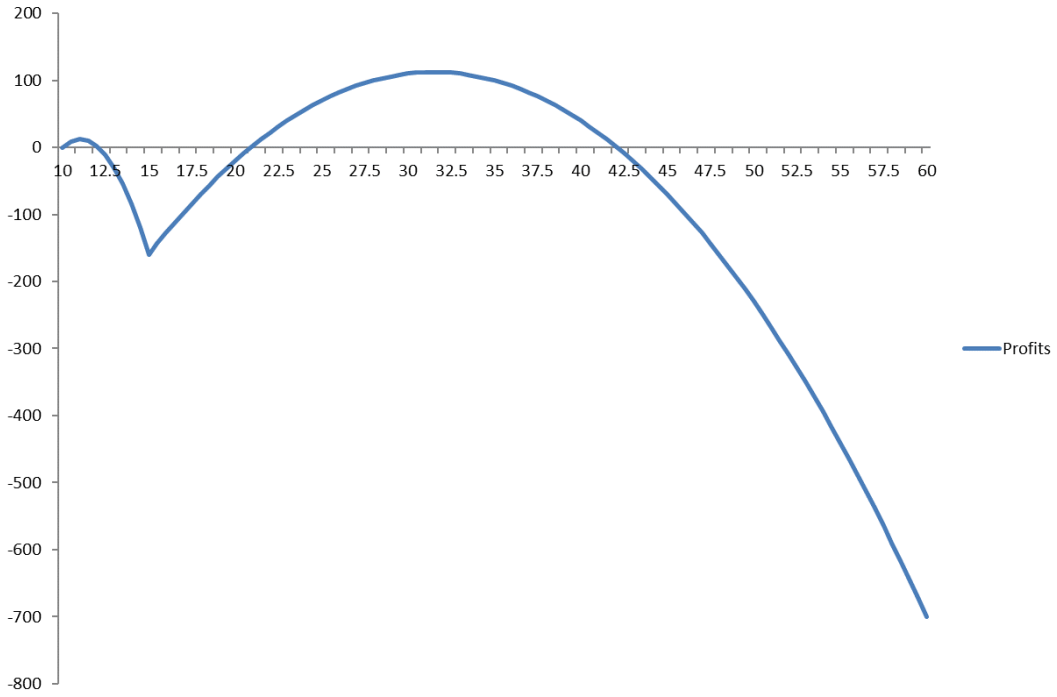
1.22 These equations make a number of implicit assumptions regarding elasticities of demand and cost elasticities:

- the elasticity of demand in competed areas is 2 at the initial price of 10, and increases as prices rise until demand reaches zero;
- the elasticity of demand in non-competed areas is 0.2 at the initial price of 10, and increases as prices rise until demand reaches zero;
- the cost structure at a competitive price is 70% fixed, and 30% variable. This reflects the cost structure set out in BT's regulatory financial statements.[225]

1.23 From these equations, it is possible to derive the profitability of any price which BT could set. It is easy to determine, from this, that it would be profitable for Openreach to set a price 5-10% above the current competitive level. Indeed, it would be even more profitable to set a price much higher than this, and concede all the volume in the competed part of the market:

[225] The cost/ volume relationships for access fibre cable are 90% fixed, 10% variable; while those for local lines copper cable are 57% fixed, 43% variable. 70% is chosen to fall roughly midway between these two values, reflecting a mix of FTTC and FTTP over the review period. See https://www.btplc.com/Thegroup/Policyandregulation/Governance/Financialstatements/2019/LRICModelRelationshipsandParameters2018-19.pdf, pp. 39-41

Figure 1.1: Profitability of different sizes of price increase for equations (1) to (4)



Source: TalkTalk analysis

1.24 Figure 1.1 shows the relationship between profits and prices. The y-axis shows the net change in profits, with positive values being increases in profits, and negative values being reductions in profits. The x-axis shows prices, starting from the competitive value of 10 and increasing; a value of 20 is a doubling in the competitive price. In this graph, it can be seen that there is a local maximum at a price increase of just over 10%. Any price increase between 10% and 20% is more profitable than setting the competitive price.

1.25 There is also a second profitable region, with prices ranging from around 110% above costs right up to 320% above costs (the area between 21 and 42 on the x-axis of Figure 1.1). This is a region which reflects profitability when all demand in the competed area has been lost, and Openreach prices as an unconstrained monopoly. Such extreme prices above cost have previously been seen in uncompetitive markets which Ofcom has chosen not to regulate to cost– for example, at present, Openreach's price for a 10Gbps leased line is [✂].[226]

1.26 This begs the question of how elastic the demand curve facing Openreach would need to be in order to make it unprofitable to increase prices by at least 5-10% above the competitive level.

1.27 Leaving the non-competitive demand curve unchanged, in order for it to be unprofitable to raise prices by 5-10%, the demand curve would have to be changed to:

$$Q_c = 200 - 20p \ (eq. 5)$$

[226] [✂]. This is outlined in more detail below.

1.28 However, this leaves a large area where it would be profitable to increase prices so as to only sell to the market in uncompeted areas– once again, this area ranges from 110% to 320% in excess of costs.

1.29 In order for it to be unprofitable to increase price by all increments more than 5-10%, what is needed is for the elasticity of the demand curve in *uncompeted* areas to be increased. The break-even demand curve is approximately:

$$Q_n = 125 - 2.5p \ (eq. 6)$$

1.30 This implies that a very substantial proportion of customers in non-competed areas would have to be willing to give up taking fixed line broadband services in the event of price rises of relatively modest scope.

1.31 It is important to note that the elasticity of demand in these equations is an elasticity at a wholesale level. This elasticity will generally be lower than the retail elasticity of demand, reflecting both pass-through of less than 100% from wholesale prices to retail prices, and the cushioning impact of other elements of the cost stack.[227] A reasonable approximation would be that an elasticity of 2 at the wholesale level would imply an elasticity of between 4.5 and 5 at the retail level. This seems likely to be a considerable overestimate in a market with high switching costs and significant product differentiation between networks.

1.32 We will also provide the Excel spreadsheet of this model to Ofcom.

1.33 Furthermore, the model is a static one which assumes that there are no strategic interactions between firms. Such strategic interactions are likely to increase the price rise which is seen in practice above the level of the modelled price rise. In particular, faced with a BT price increase across the whole of a geographic unit, other networks (whether Virgin Media or an independent FTTP network) will have incentives to increase their own wholesale prices above the competitive level.

1.34 This can be most easily seen in a duopolistic area. In such an area, the incentive to increase prices above the competitive level is universal irrespective of the form of competition adopted, as leaving the wholesale price at the competitive level will result in zero supernormal profits, while any price greater than the competitive level will result in positive supernormal profits.[228] The price set by the altnet will generally be above the competitive level, but below that of BT, allowing the altnet to gain market share from BT while simultaneously setting a positive margin for each product.

1.35 This (unilateral effects) strategic incentive will increase the proportionate overlap required above the level which would otherwise be modelled based on static elasticities alone. As such, this is a factor which will tend to lead to underestimates of the appropriate overlap

[227] For example, suppose that the wholesale cost of broadband is £12 per month, and the (ex VAT) retail cost of broadband is £24 per month. A £1.20 wholesale price increase would be 10% at the wholesale level, but only 5% at the retail level, even assuming 100% pass-through.

[228] This reflects that the market elasticity of demand will be less than zero due to the utility-like characteristics of fixed line broadband.

between Openreach and its competitors in order for Openreach to be effectively constrained.

1.36 The second factor which is omitted from the model, but which has the potential to push the appropriate threshold higher than modelled on strictly static considerations, is coordinated effects. Ofcom has not considered the prospect that there might be coordination between BT and its two potential major rivals, CityFibre and Virgin Media. This issue is considered in more detail in the WLA SMP section of the main document, section 4.3.

1.37 Third, and importantly in practice, the model does not take into account the impacts of vertical integration. It is likely that vertically integrated firms will experience somewhat lower elasticities of demand in competed areas, as they can strategically use their downstream retail operations in order to retain customers in competed areas. This will lower the competed area elasticity of demand for a vertically integrated operator such as Openreach.

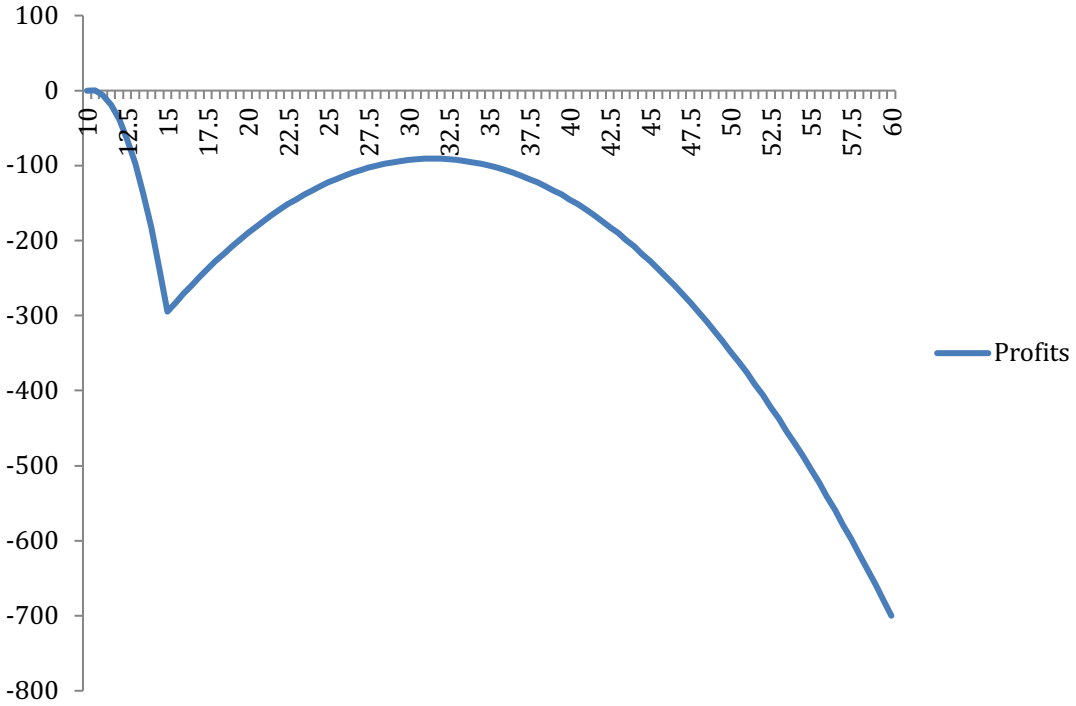
1.3 Proportionate overlap required to act as a constraint

1.38 All of the above analysis has set out that a 50% overlap between Openreach and an altnet in a given geographical area is unlikely to be sufficient to act as an effective constraint sufficient to constrain Openreach from being able to exercise market power within that area, even where Openreach is constrained to set the same price across the geographic unit in question, rather than price discriminating.

1.39 This then begs the question—if a 50% overlap is too low, what overlap would be appropriate in order to act as an effective competitive constraint on Openreach? This can be determined for any pair of demand curves (in the competitive and non-competitive areas) through goal seeking the point at which all price increases of 5% or more are unprofitable.

1.40 On the basis of the demand curves set out in equations 1 and 2, above, and ignoring reactions of altnets due to the umbrella effect, coverage of an altnet would need to be approximately 62.5% in order to make it unprofitable for BT to increase its prices by 5%. This level of coverage would also make it unprofitable for Openreach to attempt to solely serve non-competitive areas, by setting a price which drives its demand to zero in competitive areas, and maximises its profits in non-competitive areas alone. This can be seen in the current graph, for 62.5% coverage.

Figure 1.2: 62.5% coverage, demand curve as in equations 1 and 2



1.41 As before, this graph is based solely on short-run unilateral effects, and does not take into account strategic reactions from other operators. These would tend to increase the overlap threshold which is required in order to act as an effective competitive constraint against Openreach's market power.

1.42 Overall, therefore, this modelling indicates that Ofcom should set a threshold of somewhere in the range of 60-75% for an altnet to be considered to be a viable competitor in a geographic unit. 50% appears meaningfully too low based on the available evidence, and would require unrealistically high demand for wholesale and retail broadband products.

2 Altnet FTTP REO model

2.1 In section 5 we describe how we developed a model to test the impact of wholesale MPF/FTTC price increases on the revenue and returns for an altnet FTTP investment. Below, we outline the design approach and key assumptions.

2.2 We have created a REO model for an altnet FTTP network. The model is calibrated to match the key inputs and outputs of Ofcom's REO model that is outlined in Annex 17[229]:

- initial build cost £297 per premises
- connection cost £190 per premises
- operating costs 4.4% of cumulative capex
- rental revenue £8.50-£12.75 per month (mid-point £10.63)
- 'breakeven' occurs at a WACC of 7.9%[230]

2.3 We have then tested the impacts resulting from an increase in the wholesale MPF/FTTC price (versus cost based prices). To do this we made the following assumptions.

2.4 The increase in wholesale MPF/FTTC prices above cost is based on Ofcom's projections[231] – these may underestimate the cost-based price since Ofcom incorrectly included obsolete asset costs in its calculation thereby overestimating costs[232].

2.5 We then derive the retail price changes for each different WLA product based on different levels of pass through.

- We assume that the pass through of wholesale MPF/FTTC prices into their corresponding retail prices is 80% for non-BT CPs (such as TalkTalk).
- There is then a further assumption for the pass through from non-BT CPs' MPF/FTTC retail products to other WLA products (e.g. BT FTTC, Virgin DOCSIS and altnet FTTP).
- The level of pass through to other products reflects two main factors:
  - CPs not using Openreach wholesale products will raise their retail prices less than non-BT CPs reflecting their optimal approach is not to raise retail prices as much as other CPs, but rather to take some of the reduction in competitive

[229] What is relevant in this analysis is changes in prices, volumes, revenues, returns etc due to the different regulation, rather than the absolute levels of these factors.

[230] Ofcom's model essentially derives the rental revenue required for breakeven based on a WACC of 7.9%. This means that at this level of rental revenue the IRR is 7.9%

[231] The model is based on the per customer figures in Table A16.8 since these are most appropriate for modelling per customer impacts

[232] See Frontier Economics report footnote 2: "*We note that Ofcom has calculated its own estimate of BT's over-recovery under its proposed approach, which is significantly lower than the estimate we present above, at around £542m (Wholesale Fixed Telecoms Market Review 2021-26 Consultation, Annex 16 Table A16.7) over 5 years. However, Ofcom has assumed that in the counter-factual cost-based prices would be inflated to allow BT to fully recover copper cable assets that risk being stranded in the future following fibre over-build. It is unclear why prices based on forward looking costs should reflect obsolete assets*."

tension as increased market share. This includes BT CPs since they do not face the wholesale price rise (it is 'wooden dollars')

- The pass through will be lower for products that are not close substitutes for FTTC such as G.fast, DOCSIS and particularly FTTP. The closer the substitutes the products are, the greater the cross-elasticity of demand and pass-through
- This results (in FY25) in pass through (of wholesale MPF/FTTC price increases) of: MPF/FTTC – 72%; DOCSIS – 32%; FTTP – 28%.

2.6 The impact of these assumptions is that the total increase in retail prices is £930m from FY22 to FY26[233].

2.7 To derive the revenue impact for an altnet we then make two further assumptions: the appropriation of the higher FTTP price by altnet investor is 90%[234] and [✂].

2.8 The impact of higher wholesale MPF/FTTC prices differs depending on which year the investment is made – the later an investment is made the less of the wholesale MPF/FTTC price increase over the 2021-26 control period feeds through to the altnet. Therefore the model is designed for different investment start years (FY22-FY26).

2.9 We have estimated the build profile by year based on altnets quickly ramping up volumes from the current build rates to meet the projected 10m build by March 2026[235].

2.10 The aggregate impact is then calculated by combining the impact for each year of build and the percentage of build undertaken in each year.

2.11 This provide an 'average' impact in revenues or returns for all altnet investments. The impacts differ depending on the year of investment which is shown in Fig 5.2.

2.12 We will also provide the Excel spreadsheet of this model to Ofcom.

[233] This cannot be directly compared to Ofcom's estimate of wholesale price changes (Table A16.7) since the retail number includes impact on all products (including cable) and is at retail rather than wholesale level. It is not possible to derive a total wholesale market figure since there is no wholesale prices for some products e.g. DOCSIS and FTTP. Ofcom in its 'cost benefit analysis' says the costs is £1.50 per month for 5 years for 21m customers which is £1.9bn (V4 footnote 31). However, no explanation is given for the £1.50 figure.

[234] This reflects that FTTP networks are unlikely to be able to perfectly price discriminate between retail providers in order to extract all of the additional profits, some of which will be retained by retailers.

[235] Ofcom has not provided its expected profile of roll-out over time. We have developed a projection based on announcements and likely time to ramp up roll-out rates. The estimated roll-out is higher in later years see Fig 5.2, reflecting the time it takes for altnets to scale up.

3 Frontier Economics report

OFCOM ACCESS REVIEW 2021 - 2026

Assessment of TalkTalk's adaptive regulation proposals

February 2020

CONTENTS

EXECUTIVE SUMMARY

Background

The Government and Ofcom have both set out strategies to accelerate investment in full fibre ('FTTP'), by alternative network operators ('altnets') and Openreach, while at the same time protecting consumers' interests. We understand that TalkTalk supports these objectives. A key question Ofcom now faces is what form of regulation of Openreach wholesale products between 2021 and 2026 will best meet these objectives. Frontier Economics has been asked by TalkTalk to provide independent analysis comparing two options for regulation: Ofcom's proposals and an alternative model called 'adaptive regulation' which has been proposed by TalkTalk. [1]

Objectives for regulation

The first step in our analysis was to develop a robust economic framework against which each option can be assessed. Ofcom has outlined its objectives as encouraging investment and protecting consumers which it encapsulated in four criteria: encouraging FTTP investment by altnets; encouraging FTTP investment by Openreach; protecting consumers from excessive prices; and protecting retail market competition between Communications Providers (CPs). We generally agree with these objectives but consider that Ofcom overlooked, or was not explicit about, a number of other important factors such as: the fact that altnet investment will depend on confidence that Openreach will not act anti-competitively; and, if possible, that regulation should be remain effective if the market does not develop as expected, be practical to implement and not be susceptible to gaming.

Ofcom's proposal

Currently, prices for wholesale products which are used to deliver basic and superfast broadband services, such as MPF and GEA 40/10, are set based on Openreach's costs. Ofcom's has proposed to diverge significantly from this approach - in the 70% of the UK where Ofcom anticipates that altnets might build FTTP in the next ten or so years, Ofcom is proposing to allow prices to rise from their current levels in line with CPI inflation from 2021. This could result in wholesale prices around 20% higher than Openreach's cost, by 2026, equating to around £26 per household or £380m across all Openreach lines in the areas that Ofcom considers 'potentially competitive'. Across the whole period, this would imply that prices faced by consumers could be in the region £1.1 billion above cost.[2]

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[1] Subsequent to the preparation of this report, Ofcom published its full Wholesale Fixed Telecoms Market Review consultation. However, the proposals set out in the consultation are broadly aligned with the initial proposals referred to above. As such, the publication of the consultation does not impact on the analysis presented here.

[2] We note that Ofcom has calculated its own estimate of BT's over-recovery under its proposed approach, which is significantly lower than the estimate we present above, at around £542m (Wholesale Fixed

Ofcom's approach may, compared to current regulation, improve altnets' incentives to invest in FTTP since higher FTTC wholesale prices will allow higher FTTP retail prices which should, all else equal, increase altnets' investment returns. However, the impact on investment from any FTTC wholesale price increase may be quite limited due to incomplete 'pass-through' to retail prices and operational constraints on the level of investment such as labour, capital and permissions for constructions.

Furthermore, Ofcom's approach has a number of risks:

- by increasing its incentive to sweat its copper assets it could reduce Openreach's FTTP investment incentives;
- it could weaken altnets' investment incentives by eroding the customer base of retailers such as TalkTalk that can anchor altnet investment;
- to the extent that Ofcom's proposed approach will result in higher retail prices, this will increase costs to consumers; and
- higher wholesale charges could put greater pressure on (non-BT) access seekers' margins, thereby weakening retail broadband competition.

Adaptive regulation

TalkTalk's adaptive regulation approach aims to address these weaknesses – under adaptive regulation, rather than prices being set above Openreach's costs from the outset in 2021, Openreach's prices would initially be set in line with cost and only rise in an area if and when altnet FTTP investment actually occurs in that area. In other words, the regulation adapts to market conditions.

Comparison of impact of adaptive regulation against Ofcom's proposal

We have assessed adaptive regulation versus Ofcom's proposals against the criteria outlined above. The table below summarises the main elements of our assessment. Overall, we find:

- Ofcom's proposals and adaptive regulation are likely to result in similar levels of FTTP investment.
- TalkTalk's proposals appear superior in a number of areas - in particular, lowering wholesale prices before infrastructure-based entry provides clear benefits to end users both directly through lower prices and by facilitating access-based competition.
- The only area where TalkTalk's proposals appear inferior is complexity. However, this is likely to be of secondary importance relative to the potential impacts on downstream competition and costs to consumers associated with setting regulated prices above cost, prior to investment, when there are not clear countervailing benefits.

Telecoms Market Review 2021-26 Consultation, Annex 16 Table A16.7) over 5 years. However, Ofcom has assumed that in the counter-factual cost-based prices would be inflated to allow BT to fully recover copper cable assets that risk being stranded in the future following fibre over-build. It is unclear why prices based on forward looking costs should reflect obsolete assets.

Figure 1 Adaptive regulation (AR) compared to Ofcom's proposals against key objectives in Category 2 areas

Objectives	Score 	Overall assessment
Supporting BT's incentives to invest		▪ In areas where competitive pressure is weaker, adaptive regulation (AR) should reduce returns to BT from 'sweating' its copper assets and therefore increase incremental returns from FTTP investment ▪ AR appears better overall, though the difference is likely to be modest
Supporting alternative networks' incentives to invest		▪ Lower price *before* investment under AR should not deter altnet entry, since returns only depend on post-entry price levels. ▪ National price averaging may dampen increase in FTTP retail prices resulting from FTTC wholesale price rises under AR. ▪ AR provides better protection of access seeker's customer scale ▪ AR price floor provides greater protection against exclusionary behaviour by BT ▪ AR could reduce ISPs incentives to support altnet investment but, in practice, the impact is likely to be small
Protecting consumers		▪ By keeping wholesale prices in line with cost pre-entry, AR provides greater protection from excessive prices and links variations in price to variations in customer choice. ▪ Supply-side constraints could mean that by 2026, around 70% of homes will not have seen investment but still face above-cost pricing under Ofcom's proposals ▪ Under AR costs to consumers could be in the region £850 million lower.
Protecting downstream competition		▪ Lower FTTC prices prior to altnet investment under AR should improve retail competition
Robustness to uncertainty and gaming		▪ Ofcom's proposal to define potentially competitive/ non-competitive boundary ex-ante is more prone to error than the adaptive approach – if, for, example, less build occurs than expected, then consumers will be exposed to high prices without benefiting from investment.

		▪ AR avoids this risk as it is based on the *actual* rather than predicted evolution of competition
Complexity		▪ AR appears considerably more complex than Ofcom's proposed approach ▪ However, Ofcom already collects some of the needed data and has developed the required models

Source: Frontier analysis

1 INTRODUCTION

Ofcom set out its broad policy direction for fixed markets in its July 2018 Strategic Policy Position[3], with the primary objective of supporting large-scale full-fibre (FTTP) investment. Ofcom is considering how its approach to access regulation can best meet this objective as part of the upcoming Access Review. The Access Review will encompass both mass market broadband services (previously addressed in the Wholesale Local Access (WLA) market review) and business connectivity services (previously addressed in the Business Connectivity Market Review (BCMR)) and will run for 5 years.

Ofcom has consulted on initial proposals for geographic market definitions[4] and also on high-level remedies proposals for BT's copper-based services (including FTTC) as well as its full fibre services. [5]

One of the core features of Ofcom's proposed approach is to apply distinct regulation across different parts of the country, to reflect varying levels of **expected** infrastructure competition. In its response to Ofcom's remedies consultation, TalkTalk set out an alternative approach to regulating wholesale inputs to FTTC services, based on the principle of 'adaptive regulation' where regulation is varied across the country and over time according to the **actual** level of infrastructure competition.

Under Ofcom's proposed approach, a more relaxed form of regulation would apply from the outset, across all areas that Ofcom considers might see altnet entry over the next ten or so years ('Category 2') – referred to by Ofcom as 'potentially competitive' areas. In areas which Ofcom considers to be 'non-competitive' in the long term ('Category 3'), cost-based price regulation would apply during the upcoming market review period.

Under TalkTalk's proposed approach, Ofcom would initially set cost-based charges in all areas where BT holds SMP but relax price regulation when and where altnet investment actually happens – in other words, regulation would 'adapt' over the course of the review to reflect actual changes in competitive conditions, ex-post.

TalkTalk has asked Frontier to provide an economic assessment, comparing Ofcom's proposed approach and TalkTalk's alternative approach. In particular, we have been asked to:

1. Develop a robust economic framework for assessing different proposals for wholesale access regulation, taking into account Ofcom's objectives and the incentives of key stakeholders.
2. Assess both Ofcom's and TalkTalk's proposed approach against these objectives.

Our comparison of the proposals is in two stages:

[3] Ofcom (2018), Regulatory certainty to support investment in full-fibre broadband: Ofcom's approach to future regulation

[4] Ofcom (2018), Promoting investment and competition in fibre networks: Approach to geographic markets" in December 2018.

[5] Ofcom (2018), Promoting competition and investment in fibre networks: Initial Proposals – Approach to remedies.

- First, we assess Ofcom's proposed approach relative to the 'as now' scenario, in which Ofcom continues to regulate Openreach's wholesale 40/10 Mbit/s FTTC product (MPF+GEA 40/10) at cost, allowing pricing freedom on higher bandwidth services.
- We then compare TalkTalk's adaptive approach to Ofcom's proposed approach.

2 OFCOM'S OBJECTIVES FOR WHOLESALE ACCESS REGULATION

Ofcom's overall duties when setting charge controls, as prescribed by the 2003 Communications Act, are to only set such conditions where it appears, based on market analysis, that: [6]

1. "*... there is a relevant risk of adverse effects arising from price distortion.*"; and
2. "*… the setting of the condition is appropriate for the purpose of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefit on the end-users of public electronic communication services*."

In line with the above, Ofcom identifies the following objectives for its approach to remedies:[7]

- Ensuring BT's competitors have appropriate conditions to support their investments;
- Ensuring BT has appropriate conditions to invest in fibre;
- Protecting consumers against excessive prices and poor quality; and
- Maintaining retail competition based on access to the BT network.

Ofcom recognises that there are trade-offs between these objectives, which need to be considered when designing regulation - for example reducing wholesale prices normally increases consumer welfare in the short term but may also reduce investment incentives.

In addition to considering these broad strategic objectives, it is important to consider the extent to which regulatory proposals are likely in practice to have the desired effect and at a cost that is proportionate given the expected benefits. As such, it is important to consider:

- The robustness of any proposed approach to uncertainty and 'gaming' by operators, which could make it challenging for regulation to be implemented effectively
- The complexity of regulatory proposals – the more complex a proposed approach, the greater the likely costs to industry.

Building on the broad objectives outlined above, we have developed a framework for assessing proposals for wholesale regulation set out in Figure 2 below.

6 Section 87(9) of the Communications Act 2003

7 Ofcom (2018), Promoting competition and investment in fibre networks: Initial Proposals – Approach to remedies, paragraph 2.3, page 9.

Figure 2 Framework for assessing wholesale access regulation

Objectives	Relevant factors
Supporting BT's incentives to invest	▪ Incremental returns from FTTP investment relative to FTTC ▪ Regulatory certainty and transparency
Supporting alternative networks' incentives to invest	▪ Impact on retail margins/ volumes of FTTP providers ▪ Impact on the margins and retail market shares of operators that rely on access to BT's network (access seekers) ▪ The ability and incentive of BT to engage in exclusionary behaviour ▪ Regulatory certainty and transparency
Protecting consumers	▪ Protection from the risk of excessive pricing ▪ Distributional / fairness impacts
Protecting downstream competition	▪ Impact on access seekers' ability to compete in the retail market based on access to BT's network
Robustness to uncertainty and gaming	▪ Robustness to forecast error under uncertainty ▪ Robustness to 'gaming' which would frustrate the objectives above
Complexity	▪ Complexity of charge control design ▪ Costs of implementation

In the rest of this section we consider in more detail the above objectives and relevant factors and how they might be affected by the regulation of wholesale FTTC charges.

2.1 Incentivising investment

When BT or altnets are making investment decisions, they will take into account the expected returns from the cash flows resulting from the investment (i.e. the internal rate of return - IRR) – a rational investor will invest only where the IRR is above an appropriate hurdle rate.

FTTP networks have high upfront fixed costs, which largely vary in relation to the number of premises passed and the distance between these premises. The resulting IRR is a function of a number of factors including:

- The cost of constructing the network;
- The penetration rate;
- The average margin per subscriber (AMPU); and

- In the case of existing operators, any offsetting loss of margin from existing operations, compared to the counterfactual where the operator does not invest[8].

As a result, regulation of wholesale FTTC charges can have a number of impacts on fibre investment incentives, including:

- Changes in the number of FTTC subscribers – in particular, higher wholesale prices may put access seekers that rely on the Openreach network at a competitive disadvantage compared to vertically integrated operators (including BT), resulting in the erosion of their market shares and thus fewer customers available to be migrated onto FTTP;
- Indirect effects on the expected AMPU for FTTP networks where the retail prices of FTTC-based services (which are partial substitutes for FTTP services) are affected by pass through of wholesale prices for the regulated services;
- For BT, the impact of regulation on the profitability of the counterfactual where they do not invest in FTTP; and
- Increased regulatory predictability, which will in turn reduce investor uncertainty and may therefore encourage investment by reducing the associated hurdle rate.

However, in practice the impact of a change in FTTC prices on fibre investment is likely to be dampened by a number of factors:

- The future market for broadband services is complex and dynamic with competition at both the wholesale and retail level; this means that changes in regulation for a small subset of copper-based wholesale access services may have a limited impact on FTTP prices or FTTC market share for FTTP services;
- Changes in regulation within the upcoming review period will have a limited impact on overall returns from FTTP investment in any area as the majority of returns will depend on prices in years after 2026;
- Supply-side factors, including labour supply, which will constrain the maximum feasible rate of fibre rollout;
- BT, as an existing and dominant operator, may be able to strategically influence the market outcome (e.g. by deterring entry) in order to maximise its returns and its ability and incentives to do so may vary as regulation varies.

More generally, the impact of the level of regulated wholesale charges on investment needs to be considered within the context of a broad range of factors that will influence the decision to invest in fibre. It is also important to note that accurately determining IRRs and hurdle rates for assets with expected operating lives of 30+ years is challenging, with investment decisions reflecting 'sentiment' to some degree.

We discuss these issues in more detail below.

[8] For example, for Openreach, investing in FTTP will lead to a reduction in margins on the FTTC network as customers migrate. The calculation of the IRR should only take account of the net change in margin due to a combination of any FTTP premia for customers served in both case and the net increase in customers due to a higher quality offer.

Wholesale investment charges impact alternative networks' investment incentives through a number of channels

The impact of the level of wholesale charges on alternative networks' investment incentives is not straightforward. With regards to alternative networks, changes in wholesale access charges for copper-based services could impact investments by:

- **Improving returns from fibre indirectly by increasing margins on retail FTTP services**:
  - **Cost pass-through** - higher FTTC wholesale charges will result in an increase in marginal costs for access-based retailers, such as TalkTalk and Sky, which can be expected to in turn drive an increase in FTTC retail prices. Rival operators that use their own infrastructure, such as BT and Virgin Media, may also respond to the price increases of access seekers by raising their own prices, increasing margins on FTTC services.
  - **Substitutability between FTTC and FTTP retail products** means that increases in the retail price of FTTC-based services will indirectly result in an increase in FTTP retail prices. This effect is likely to diminish over time as substitutability between these services weakens.
- **Making access seekers' counterfactuals less attractive:**
  - An increase in the wholesale FTTC price is unlikely to be passed on in its entirety to retail customers, hence the margins of an access seeker for FTTC subscribers can be expected to fall as wholesale charges rise. This will lower an access seeker's returns in the counterfactual where it continues to rely entirely on access to BT's network to deliver broadband services. This could in turn make investment in fibre by access seekers or altnets, relatively more attractive.

On the other hand, higher wholesale charges would put access seekers at a competitive disadvantage in the short term, and risk eroding their market share where they are reliant on BT. This is because:

- BT may well remain the only wholesale provider across much of the country during the period of the market review, limiting the ability of access seekers to migrate their customers to alternative networks;
- Since wholesale charges are essentially transfer prices from BT Group's retail and infrastructure divisions, an increase in wholesale FTTC prices will not change BT's true (marginal) costs meaning that its competitive position will improve vis-à-vis the access seekers; and
- Similarly, as Virgin Media delivers services using its own cable infrastructure, its (marginal) costs will also be unaffected by changes in BT's wholesale charges.

To the degree that altnets' investment plans are reliant on capturing wholesale demand from existing access seekers as they roll out network, erosion of the access seekers subscriber base could reduce the returns from investment in FTTP.

Increasing the profitability of BT's wholesale FTTC services would weaken its incentives to invest

Given that BT already has an existing (FTTC) network in place, the potential impact of changes in regulated wholesale charges on the profitability of services delivered over this network will be an important factor in its decision to invest in FTTP.

In areas where the case for infrastructure competition is weak, BT rolling out FTTP would essentially mean replacing its existing copper network with full fibre with a limited change in subscriber numbers. In this case the impact of wholesale price regulation on the incremental average margin per unit of FTTP, vis-à-vis its FTTC services, will be the key factor driving its investment incentives.

Whilst higher wholesale FTTC charges may indirectly increase the margin per customer on FTTP services (as outlined above), they will also more directly increase the margin earned on FTTC services. It is likely that the overall net impact of a higher FTTC price would be to make investment in FTTP comparatively less attractive for BT than the counterfactual of continuing to 'sweat' its copper assets. This stems from the fact that:

- as explained above, pass-through of increases in the retail prices of FTTC products to FTTP products will be imperfect and so the increase in FTTP prices will be correspondingly lower than the increases in FTTC prices; and
- therefore, an increase in wholesale FTTC charges can be expected to result in a reduction in the incremental expected returns to BT from investing in FTTP.

Strategic behaviour by BT could deter investment by alternative networks

Any potential positive effects of higher wholesale charges on alternative networks' investment incentives could be offset by the fact that, where BT considers there to be a risk of entry by alternative networks, it may have an incentive to engage in strategic behaviour to deter competitive entry, including:

- Targeting its FTTP rollout in areas where altnets have invested (or have indicated an intention to invest); and/or
- Pricing wholesale and retail services aggressively in areas where altnets invest – in particular, setting wholesale FTTC charges below the level of the price cap, or reducing the premia for higher bandwidth FTTC and FTTP services. This would make it harder for alternative networks to compete for wholesale customers and/or reduce the margins that they can expect to earn on FTTP services. However, if wholesale charges are required to be consistent nationally, as required under current WLA regulations (or across Category 2 areas under Ofcom's proposals), BT would need to consider the costs associated with reducing prices in areas where it does not face a competitive threat (thereby making exclusionary pricing behaviour less profitable).

Uncertainty around wholesale charging can undermine investment

Given that fibre networks will have operating lives of 30+ years, investors will be seeking transparency and clarity on the likely future regulatory approach, not only within the 5-year period from 2021 when they will be focussed on rolling out networks, but also in the longer term when the focus will shift to returns from operating these networks.

Credibly committing to a long term regulatory approach could increase investment by reducing risk and hence the hurdle rate. Conversely uncertainty around the level of wholesale prices (which would in turn drive uncertainty at the retail level) could undermine operators' incentives to invest.

Key factors that affect regulatory certainty include the extent to which:

- Ofcom's approach to price controls gives rise to predictable wholesale charges and hence allows stakeholders to forecast wholesale and retail prices with reasonable accuracy. This means adopting approaches to setting prices that are evidence based (rather than arbitrary) so that future price changes are more predictable;
- Any changes in regulation are well justified so that stakeholders can rely on Ofcom to continue evidence-based regulation in future;
- Ofcom presents a clear, long-term regulatory strategy (without fettering its discretion in future market reviews); and
- Ofcom's approach to successive price controls is (and can be) consistent with the long-term strategy, while remaining robust to changing circumstances and outcomes.

The role of wholesale price regulation needs to be considered alongside other, potentially more important, factors affecting investment incentives

Finally, the role that the level of wholesale charges plays in driving investment in fibre needs to be considered within the context of other factors that affect the incentives to invest in FTTP. In some cases, the level of wholesale FTTC charges is likely to be of limited importance:

- Where consumers are prepared to pay a premium for FTTP services sufficient to cover the cost of investment, the need for higher wholesale charges to support the business case for FTTP investment is weaker; and
- In areas where the cost of deployment is very high, increasing the level of wholesale FTTC charges is likely to have a limited impact on the business case for FTTP investment. In such areas, where there is no commercial business case (i.e. where the expected profits from investing in fibre are not expected to cover the costs), there is a case for public subsidy to reflect wider social benefits (externalities) from near-universal roll-out of FTTP. Again, in this case the need for higher wholesale FTTC charges to support the business case for FTTP investment is weaker.

2.2 Protecting consumers

In the long term, Ofcom considers that infrastructure-based competition will provide for the best outcome for consumers, even at the expense of some short-term customer detriment. However, given that regulation is only one factor that determines whether a given customer will benefit from infrastructure-based competition, it is reasonable to ask whether any detrimental effect on consumers outweighs the expected long-term increase in investment.

As explained above, an increase in the price of a given wholesale product can be expected to give rise to a corresponding increase in the prices of retail services

that use that wholesale product as an input (and potentially also other retail services which are considered substitutes). This will in turn drive up costs to consumers. The overall impact will depend on the degree of pass-through from wholesale to retail services which, as explained in Section 2.1 above, may vary between services and providers.

It is also important to consider the degree to which proposals may result in outcomes which may be considered "unfair". Such outcomes could include:

- Consumer prices[9] (or quality) varying significantly within the UK for the same service, without a clear objective rationale for variations;
- Unexpected increases in prices for individual retail customers over time; and
- An unequal distribution of the cost and benefits of regulation or competition, in particular with respect to customers who could be considered 'vulnerable'.

2.3 Protecting retail competition

Since infrastructure competition will take time to develop and, even in the long term, may not emerge everywhere, Ofcom recognises that it is important to ensure that retail competition based on access to BT's network is maintained[10].

As set out above, more relaxed regulation of wholesale products is likely to reduce margins for access seekers making it harder for access seekers to compete in retail markets and may lead to the erosion of their market share. A weakening of downstream competition would in turn be expected to have a negative impact on consumer outcomes in terms of choice, quality and price and may also reduce the viability of altnet investment.

2.4 Robustness to uncertainty and gaming

Even if the underlying rationale for a set of proposals is sound, it is important to consider whether, they are likely in practice to have the desired effect - in particular, whether the proposed approach is robust to uncertainty and the risk of 'gaming' by operators:

- Inherent uncertainty around future fibre investments means that regulation could be susceptible to the risk of forecasting error – in particular, when setting unit prices based on forecast costs and volumes or where defining geographic market boundaries based on expectations around future (as well as existing) market conditions. This risk is exacerbated by the extension in the length of the period of the review, from three to five years.
- Regulation could in some cases distort behaviour in a way that is detrimental to Ofcom's objectives, for example, incentivising or deterring investment in a given area in an attempt to 'game' the regulation.

[9] These prices refer to 'residential' consumer prices, as distinct from business prices that are already regionally disaggregated to some degree.

[10] Ofcom (2018), Promoting competition and investment in fibre networks: Initial Proposals – Approach to remedies, p. 9.

2.5 Complexity

Overly complex regulation could lead to higher costs to Ofcom and the wider industry and may reduce regulatory transparency. Factors that could contribute to this include:

- Burdensome information requirements (e.g. detailed information relating to rollout plans)
- Complex charge control design – e.g. implementing several different price caps/ floors for different products, different locations etc.
- Complex approach to modelling costs – e.g. using a bottom-up/ theoretical model of the cost of network deployment as opposed to top-down model based on actual costs

However, given the scale and importance of the fixed broadband market, the complexity of regulation may be of secondary importance, given the materiality of the potential costs of opting for a less complex but less effective regulatory regime – in particular, where regulation fails to support Ofcom's primary objective of protecting and promoting competition.

3 ASSESSING OFCOM'S PROPOSALS

In this section, we assess Ofcom's proposed approach against the above framework.

We begin by summarising Ofcom's proposed approach. We then consider the extent to which Ofcom's proposals can be expected to achieve each of the six objectives described in Section 2. In doing so, we assess how Ofcom's proposals are likely to perform relative to the 'as now' counterfactual in which the prices of wholesale FTTC services are charge controlled in line with costs under an 'anchor pricing' approach, as in the 2018 WLA decision.

3.1 Summary of Ofcom's proposals

Ofcom has been clear that its key priority is the development of infrastructure-based competition based on full fibre networks, where possible. Ofcom has proposed to vary regulation in three different categories of geographic areas, to reflect variations in the potential level of competition in those areas. These areas are defined as follows: [11]

- **Category 1** (referred to by Ofcom as 'competitive') – those areas where at least two existing networks are present, in addition to BT, supplying broadband and leased lines services, and where Ofcom has determined, from further analysis (e.g. market share data, the strength of competitors and the extent of switching between networks), that the area is competitive i.e. no SMP;
- **Category 2** (referred to by Ofcom as 'potentially competitive') – those areas where either i) there is at least one existing alternative network present (which would include all areas covered by Virgin Media's cable network) ii) an alternative network provider has announced plans to build in the area, or iii) where Ofcom considers that there is potential for entry (based on urban density); and
- **Category 3** (referred to by Ofcom as 'non-competitive') – the remaining areas where there are no alternative networks and where Ofcom considers that future competitive network deployment at scale is unlikely. In effect category 3 is the UK excluding category 1 and 2 (and Hull)

In order to carry out its geographic analysis, Ofcom first breaks down the country into smaller areas (geographic units). Ofcom has indicated that "*either postcode sectors or Openreach exchanges would be among the best candidates*"[12] for carrying out its analysis. Further, Ofcom plans to define a coverage threshold for the purpose of assessing whether a network is "present" in a particular geographic unit. For the preliminary analysis, presented in its initial consultation on geographic markets, Ofcom has used an 'illustrative' coverage threshold of 65% - in other words a network is considered to be present in an area if it passes more than 65% of premises within that area.

[11] Ofcom (2018), Promoting investment and competition in fibre networks: Approach to geographic markets, para 2.17 p. 10.

[12] Ofcom (2019), Promoting competition and investment in fibre networks Initial proposals – Approach to geographic markets, para. 3.6

Ofcom will not impose active access regulation in Category 1 areas[13] as BT will not be determined to have SMP in those areas. For Category 2 areas and Category 3 areas, where BT would still have SMP, Ofcom has proposed different remedies, with regulation in the former intended to reflect the strategy to encourage altnet investment and regulation in the latter focussing on encouraging incentivising BT to invest.

In this paper, we focus primarily on Ofcom's proposed approach to regulating BT's FTTC network in Category 2 areas, reflecting the fact that Ofcom's proposals are more clearly developed in these areas. However, we also consider the implications of Ofcom's proposals to set different remedies between Category 3 and Category 2 areas on the basis of an ex-ante assessment of the prospective scope for competition.

3.1.1 Proposed remedies for Category 2 areas

Ofcom proposes setting a price-cap charge control for MPF[14] and GEA 40/10[15] (the key inputs for 40/10 Mbit/s FTTC retail services), with the level of the cap rolled forward from the March 2021 level (i.e. the level at the end of the current review period), adjusting annually for inflation. For higher bandwidth WLA services (e.g. GEA 80/20, G.fast, FTTP) there would be no cap, i.e. BT would continue to have pricing flexibility, as per the current approach.

Ofcom considers that this approach strikes an "*appropriate balance between encouraging competitive network investment and protecting consumers over the period of the review.*"[16]

Ofcom's proposals can be expected to give rise to a total wholesale charge for MPF+GEA 40/10 that is above a cost-based charge control by a material margin. This is due, in particular, to ongoing efficiency improvements - BT can be expected to reduce operational expenditure associated with the provision of network services. Volume effects could also contribute to the margin between wholesale charges and unit costs – take-up of FTTC-based services can be expected to continue to grow over the course of the upcoming market review, pushing down unit costs. We also note that the FTTC volume forecasts adopted by Ofcom for the current market review appear to be at least 8% lower than the volumes that Openreach actually achieved.[17]

[13] The PIA/DPA remedy could be expected to continue to apply in such areas.

[14] Metallic Path Facility (MPF): the copper wire connecting consumers to the BT network and is used to support voice and broadband services

[15] Generic Ethernet Access (GEA): Openreach's wholesale service providing telecoms providers with access to its FTTC and FTTP networks in order to supply higher speed broadband services

[16] Ofcom (2019), Promoting competition and investment in fibre networks Initial proposals – Approach to remedies, paragraph 2.18, page 14.

[17] For confidentiality reasons, Ofcom presents a range of forecasts rather than precise values. The upper bound of these forecasts was 11 million lines in 2018/19 (Ofcom (2018), WLA Statement: Volume 2, paragraph 2.82, page26). In reality, there were 11,891 FTTC lines at the end of 2018/19 (BT Results for Half Year to 30 September 2019, KPIs)

For the current access line charge control, Ofcom adopted efficiency forecasts of 4.8% per annum for opex[18] and 3% for capex (although future investment in copper-based products is expected to be limited).

To give a sense of the likely magnitude of these ongoing cost reductions, we note that Ofcom's total cost-based price cap for MPF+GEA 40/10 is set to fall from £146.07 per annum to £144.75 between 2019/20 and 2020/21, which equates to a decline of 4% in real terms (taking into account Ofcom's assumed 3% inflation rate). If we were to assume similar ongoing cost reductions going forward, then this implies an overall decrease in real costs of around 18% over the course of the upcoming five-year review period. This equates to a difference of around £26 per annum in 2026 (in today's prices), between the cost-based charge and Ofcom's proposed inflation-indexed charge, or around £380m across all Openreach lines in Category 2 areas (assuming around 70% of all Openreach lines are in these areas). Over the entire charge control period, this difference amounts to around £1.1 billion across all Openreach lines. [19]

3.1.2 Proposed remedies in Category 3 areas

Ofcom considers that its anchor-based approach to charge controls, whereby it allows BT to recover the incremental costs of new services such as FTTP from those consumers that purchase the new services, may not provide BT with sufficient incentives to build fibre networks in Category 3 areas because it will "*tend to face higher than average build costs and because it does not face competitive pressures from rival infrastructure operators.*"[20] On this basis, it considers that "*there is a case for allowing BT's fibre investment to be partly funded through higher charges for copper-based services*."[21]

Ofcom has indicated that it is considering using a RAB approach whereby investments in fibre are treated as a pool of costs that can be recovered across multiple services. This will be achieved by the calculation of a RAB mark-up which will apply to regulated wholesale charges. The impact of this is that non-FTTP wholesale charges in Category 3 areas increase to cover losses on BT's FTTP investments in Category 3 areas.

Ofcom sets out that such an approach will require a mechanism that links the FTTP investment costs that BT is allowed to recover using this RAB mark-up with the investment that it undertakes (i.e. BT provides a plan for fibre deployment, Ofcom assesses it and then Ofcom sets the terms for cost recovery followed by an annual assessment of BT's delivery of its investment plans in terms of coverage and quality).

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18 Ofcom (2018), WLA Statement volume 2 paras 4.36 – 4.37, page 63 https://www.ofcom.org.uk/__data/assets/pdf_file/0023/112487/wla-statement-vol-2.pdf.

19 We note that Ofcom has calculated its own estimate of BT's over-recovery under its proposed approach, which is significantly lower than the estimate we present above, at around £542m (Wholesale Fixed Telecoms Market Review 2021-26 Consultation, Annex 16 Table A16.7) over 5 years. However, Ofcom has assumed that in the counter-factual cost-based prices would be inflated to allow BT to fully recover copper cable assets that risk being stranded in the future following fibre over-build. It is unclear why prices based on forward looking costs should reflect obsolete assets.

20 Ofcom (2019), Promoting competition and investment in fibre networks Initial proposals – Approach to remedies, paragraph 3.5, page 20

21 Ofcom (2019), Promoting competition and investment in fibre networks Initial proposals – Approach to remedies, paragraph 3.5, page 21

The markedly different approaches that Ofcom is proposing for Category 3 vis-à-vis Category 2 areas could give rise to a substantial difference in wholesale and retail pricing over time between these areas.

3.2 Assessment of Ofcom's proposals against key objectives

3.2.1 Incentivising investment

The impact of regulation on BT's fibre investment incentives in Category 2 areas is likely to be relatively small

In many Category 2 areas, BT may face competition in the long term from alternative infrastructure operators where they are already present, including Virgin Media, and the threat of entry from fibre-based rivals:

- Virgin Media, is present in around 52%[22] of the country and is set to expand its coverage to up to c.60% through its Project Lightning programme. It also recently started offering 500 Mbit/s services over its DOCSIS cable network – already well in excess of the speeds that BT is able to offer over VDSL. The future deployment of DOCSIS 3.1 technology will enable it to deliver gigabit speeds.
- In addition, several existing and new alternative operators have announced plans to roll out FTTP in the coming years.

Due to its position as the incumbent, with a large established wholesale and retail customer base, FTTP has significant 'defensive' value for BT in areas where it faces actual or potential network competition - as customer demand for higher bandwidth services increases, BT will be incentivised to upgrade its network in order to retain customers, as the cost of upgrading (which BT estimates to be around £350 per home passed plus cost of connection) is likely to be less than the potential foregone margin if customers migrate to other networks. Upgrading to FTTP would also allow BT to compete more effectively with regards to reliability (in addition to speed) – FTTP is associated with lower fault rates than DOCSIS cable, which in turn has lower fault rates than copper-based services including FTTC.

As such, the level of wholesale FTTC prices is likely to be of limited importance in many Category 2 areas, where the above defensive effect will dominate.

We have not separately assessed the likely impact of the RAB-based approach proposed by Ofcom for BT's investment incentives in Category 3 areas, given the lack of detail in how this would operate. However, we note that, given supply side constraints, it is likely that BT's investment in the next market review period will largely be targeted at areas with highest returns. As a RAB based approach will only provide for returns at the regulated cost of capital, investment is likely to be focussed in:

1. Subsidised areas; and,
2. Areas where BT faces competitive pressure

[22] According to Liberty Global's Q2 2019 results, it had rolled out to an additional 1.8m premises under Project Lightning, bringing total coverage to around 52%.

As such, the impact of Ofcom's proposed approach in Category 3 areas may be limited.

Higher MPF+GEA 40/10 charges will increase BT's returns from FTTC services, undermining its incentives to invest in FTTP where it does not face competition

In any Category 2 areas where BT does not perceive there to be a significant competitive threat in the short-to-medium term, increasing wholesale charges on its FTTC network will reduce its incentives to invest in fibre.

This is because, when deciding whether to invest in FTTP, BT will consider the incremental returns relative to the counterfactual in which it continues to provide services using its existing copper assets with limited requirement for ongoing investment ('sweating' the assets). As noted in Section 2.1 above, whilst higher wholesale charges for FTTC may, indirectly, also result in higher FTTP margins, imperfect pass-through from lower to higher bandwidth services means that this will be outweighed by the increase in Openreach's copper returns.

This 'replacement effect' is most relevant for parts of Category 2 areas where there may be more limited or later roll-out of FTTP by alternative providers. In parts of the country where (the prospect of) infrastructure competition is more intense, this effect, although still present, is likely to be less important since, as explained above, the need to invest in order to defend market share will dominate.

The impact of higher MPF+GEA 40/10 prices on altnets will depend on the degree of pass through

A higher price for MPF+GEA 40/10 could, in principle, have a positive impact on the fibre business case for altnets:

- All else equal, since wholesale FTTC charges are an important component of the marginal cost for access seekers, an increase in the price of the 40/10 Mbit/service would be expected to give rise to an increase in corresponding FTTC retail prices.
- To the degree that there is switching between 40/10 Mbit/s and higher bandwidth services, there could also be an indirect positive impact on the retail price of FTTP broadband services.

As such, a higher FTTC price post-deployment (relative to the counterfactual where MPF+GEA 40/10 charges are set at cost) will allow the new entrant itself (if it is vertically integrated) or its retail customers to raise retail FTTP prices and/or gain market share. In this instance, the altnet could increase wholesale FTTP prices, to absorb the higher margin, thereby bringing about a higher return on its investment.

The indirect nature of the link between changes in BT's wholesale prices and the AMPU and market share for potential entrants means that it is difficult to exactly determine the impact of the proposals on the entrants' margins. The overall impact on AMPUs will be a diluted due to i) imperfect pass-through of increases in MPF+GEA 40/10 wholesale charges to 40/10 FTTC retail prices (due to imperfect competition) and ii) imperfect substitutability between FTTC and FTTP products, which means that an increase in retail prices for FTTC will translate to a smaller increase in FTTP prices. With regards to the latter effect, if there is little additional

switching to the entrant when BT raises wholesale FTTC prices (for example because the entrant is targeting customers who require much higher bandwidth services and who do not consider lower bandwidth services to be a substitute), the impact on FTTP prices may be small. Substitutability can also be expected to reduce over time.

As set out above, in addition to increasing the absolute returns from investing in fibre, higher wholesale charges can also incentivise investment or switching to alternative networks by access seekers by making the counterfactual in which it continues to rely on regulated access less attractive. This effect will, again, depend on the degree of pass-through from wholesale prices to retail prices – the lower the degree of pass-through of any MPF+GEA 40/10 price increase into FTTC retail prices, the greater the reduction in margin made by access seekers on FTTC products.

Operational constraints will limit the extent to which wholesale charges can drive increased investment in the short-term

It is important to note that supply-side factors, such as labour market constraints and planning restrictions, will likely constrain the rate of roll-out. As such, even where commercial investment in fibre is viable, deployment will take many years - a report by PRISM[23] on the cost of deploying FTTP in the UK, estimated that it would take 12 years for a single operator to cover the whole of the UK with fibre, based on international comparisons and on typical deployment rates when the industry has made the necessary investments to move forward. This implies an average roll-out pace of around 2.5 million premises per year.

While there may be scope for some acceleration in deployment if the business case is more attractive, any acceleration is likely to lead to increased costs as the price of inputs is bid up, which will limit the impact of increased potential margins on the rate of roll out.

Since it is post-deployment prices, not pre-deployment prices that affect the returns on investment, this will limit the impact that higher wholesale charges would have on altnet investment over the course of the five-year review. If we were to assume that half of these 2.5 million premises in each year will be passed by alternative operators[24] (with other half being deployed by BT), this implies that by the end of the market review in 2026, altnet entry will have occurred in less than 30% of category 2 areas[25]. For the remaining 70% of Category 2 premises, the higher level of wholesale charges will have no direct impact on the business case for altnet deployment during this review period.

Erosion of access seekers' market share prior to roll out could undermine altnets' investment case

Given the uncertainty around demand for fibre-based services, and the challenges associated with acquiring retail market share from established infrastructure players – i.e. BT and Virgin Media - the migration of access-seekers' existing

[23] A Cost Analysis of the UK's Digital Communications Infrastructure options 2017- 2050 Commissioned by the National Infrastructure Commission

[24] Since, for the reasons set out above, increasing wholesale charges is unlikely to incentivise BT to invest, we consider only altnet roll out here.

[25] Assuming around 30 million premises in the UK in total, of which 70% (21 million) are assumed to be category 2 areas.

customer bases may be an important driver for altnet investment returns. Even where an altnet is vertically integrated, it may rely to some extent on acquiring wholesale business from existing access seekers.

As explained above, even where altnet investment is viable, it will take some time for operators to deploy their own networks. As such, access seekers will continue to rely on renting MPF+GEA 40/10 from Openreach to deliver services for the entirety of the review period in the majority of Category 2 areas.

Increased pressure on access seekers' FTTC margins due to higher wholesale charges may have a negative effect on the overall FTTC customer bases of access seekers, such as Sky and TalkTalk. Indeed, as noted in a recent Frontier report for Sky, recent experience from the UK market indicates that the period of pricing flexibility that Ofcom granted to BT for FTTC services (from the start of its FTTC rollout, in 2008, up until the beginning of the current market review period, in 2018) was associated with BT significantly growing its retail market share. Between Q1 2011/12 and Q1 2016/17 BT retail's share of broadband lines grew from 35% to 41% (excluding the impact of the acquisition by BT of EE in its broadband customer base)[26]. Whilst a number of reasons may have underpinned to this growth (e.g. BT's entry into ownership/provision of premium content), it is consistent with the hypothesis that where access charges are not cost-based it provide some advantage to BT as a vertically integrated operator.

In the longer term any reduction in access seekers' customer bases will reduce the incentives of access seekers to invest directly themselves or the incentives of altnets to invest (since the volume of non-BT customers that could be migrated to the new network will be reduced).

BT may have an incentive and the ability to reduce prices to deter investment

There is a risk that Ofcom's strategy of incentivising investment through relaxed regulation of FTTC charges could be undermined by BT engaging in strategic behaviour to deter competitive entry:

- Under Ofcom's proposals, BT will still have the freedom to set its MPF+GEA 40/10 prices below the cap and also to price higher bandwidth services aggressively; and
- BT may be willing to discount prices aggressively in the short term if it expects that it will be able to recoup any foregone profits in the future, by increasing prices once the competitive threat has eased.

In order to address this risk, Ofcom introduced a uniform pricing obligation, as part of its 2018 WLA remedies, which prevents BT from introducing targeted FTTC discounts, for instance in areas where it faces competition (or the threat of entry) from alternative operators.[27] The rationale behind this approach is that it makes any exclusionary wholesale price reductions more costly for BT, since it would need to reduce prices everywhere. Ofcom has proposed to keep a similar obligation in place for FTTC and FTTP prices in the upcoming review period across Category 2 areas.

[26] BT Q1 2012/13 Quarterly Results, KPIs; BT Q4 2017/18 Quarterly Results, KPIs.

[27] Ofcom (2018) WLA Market Review: Statement – Volume 1, Section 11.

However, to the extent that Ofcom considers that higher wholesale charges may have a significant impact on rivals' investment incentives, BT may also have incentives to set wholesale prices below the level of the price cap in the short run (even if this meant doing so across all Category 2 areas) if it considered that this would allow it to raise prices in the long run.

As noted above, following the 2018 WLA decision, BT introduced pricing of wholesale FTTC services to external CPs which offered a significant discount to the list price, subject to conditions on the volume and mix of services purchased. This indicates that Openreach does not always find it profitable to charge at the level of the price cap and may find it more profitable to set a somewhat lower price, despite having SMP.

It is also worth noting that, whilst a uniform pricing constraint may deter BT from pricing FTTC services at an exclusionary level (since any price reductions would apply across Category 2 areas), BT could deter entry in a more targeted manner by building out FTTP in areas where the threat of entry is greatest and pricing FTTP wholesale services aggressively.

Further, Ofcom is applying a relaxed form of regulation in category 2 areas and may continue to do so beyond the current market review period in order to provide regulatory certainty as part of its long-term strategy for promoting investment. This means that BT could anticipate that it would be able to set prices in future period at a higher level than if prices were capped at cost, allowing it to recoup any foregone profits from exclusionary behaviour in the short term.

3.2.2 Protecting consumers

To the extent that Ofcom's approach of setting wholesale charges results in higher retail prices than under the counterfactual, where prices are controlled in line with costs, this would result in higher costs to consumers during the period where this regulation is in place, assuming BT chooses to price at the level of the cap. The total impact could be substantial – for example, if we assume that i) wholesale charges would be around 20% higher under Ofcom's proposals vis-à-vis the 'as now' approach, at the end of the market review period and ii) that 70% of any change in the MPF+GEA 40/10 wholesale price would be passed through to retail prices (on average across all products),[28] then we estimate that this would imply a cost to consumers of around £1.1 billion over the five-year review period.[29]

At the same time, given that it will take a number of years for operators to roll out FTTP networks, only a minority of consumers, even in Category 2 areas, will actually benefit from any resulting increase in fibre network investment by BT or rivals during the course of the review. Most customers will face higher prices for several years before they enjoy any benefits from increased competition. If, for instance we assume that altnets pass around 1.25 million homes per year build per year, this will mean less than a third of households in Category 2 areas will see competitive investment over the course of the 5-year review period.

[28] Assuming a total roll out rate for fibre of 2.5 million homes per year (in line with the PRISM estimate referred to above), with half being covered by altnets and the other half BT

[29] This also assumes that there are around 20 million broadband customers in Category 2 areas (which equates to around 70% of all broadband customers) and applies a discount rate of 3.5%.

Further, given the challenges associated with accurately identifying the boundary between Category 2 and Category 3 areas, there is a risk that a significant number of areas are incorrectly identified as potentially competitive and hence subject to more relaxed regulation than would have been set if they were correctly categorised. This would mean that consumers in these areas end up paying excessive prices for a number of years without ever enjoying (or even having the possibility of enjoying) the benefits of infrastructure competition.

3.2.3 Protecting downstream competition

As set out above, setting a higher MPF+GEA 40/10 price would reduce the margins access seekers earn on FTTC services, which would in turn reduce their ability/ incentives to compete for new customers against BT and other vertically integrated operators. This dampening of retail competition would in turn be expected to have a negative impact on consumer outcomes in terms of choice, quality and innovation.

This would be particularly damaging in areas where infrastructure competition does not emerge. Whilst Ofcom's approach attempts to separate out Category 3 (non-competitive) from Category 1 (competitive areas), such that relaxed regulation only applies where there is some scope for entry by altnets, this will be challenging to implement accurately and prone to error.

3.2.4 Robustness to uncertainty and gaming

Given the challenges associated with identifying where alternative networks may enter in the medium term (described below), defining the Category 2/3 boundary ex-ante will be subject to a high degree of uncertainty. Even with perfect information it will be impossible to accurately predict future altnet roll-out. This creates a substantive risk of forecasting error which would undermine Ofcom's strategy for supporting efficient fibre investment. In particular:

- Where an area where there is no prospect of altnet build is incorrectly identified as being in Category 2, Ofcom's regulation would result in consumers being exposed to excessive prices on FTTC services without any prospect of ever benefitting from competitive fibre investment. This would also increase BT's incentives to sweat its copper assets rather than invest in FTTP.
- On the other hand, where an area has potential for altnet build but is incorrectly identified as Category 3, Ofcom's regulation could entrench BT's market power in areas where competition is viable, since Ofcom's RAB-based approach is designed to support investment by BT (by allowing a mark-up on wholesale charges in proportion to the BT's FTTP investment) rather than alternative networks.

Further, the fact that Ofcom is likely to rely to a large extent on information provided by operators (in particular, in relation to network roll-out plans) whose profitability will be dependent on how Ofcom defines geographic boundaries, could create scope for gaming by these operators.

The incentives to game would, however, be reduced to some extent if Ofcom were to gather information under section 135 powers which come with the threat of fine

for inaccurate information – for example, where build projections provided to Ofcom appear to contradict information contained in internal documents. Further, it should be relatively easy for Ofcom to check/audit whether build occurred and assess the veracity of operators' projections. On the other hand, there may be a multitude of reasons as to why an operator might not build in an area where it had previously indicated an intention to do so. As such identifying deliberate attempts to mislead may be challenging.

3.2.5 Complexity

The proposal to roll forward the current price cap for MPF+GEA 40/10, adjusting for inflation, in Category 2 areas would be straightforward to implement and transparent in terms of level.

However, in terms of scope, accurately identifying the boundary between Category 2 areas and Category 3 areas, ex-ante, will be challenging. Ofcom has said that it considers areas to be Category 2 if any of the following conditions are met:

- alternative networks (including Virgin) are present;
- an alternative provider has announced plans to build in the area; or
- Ofcom considers that there is potential for entry, in particular based on urban density.

Identifying areas where alternative operators are not present and do not currently have any concrete plans to roll out but where there may scope for infrastructure competition may be challenging – the economic viability of competitive rollout will be contingent of a broad range of factors, aside from urban density, including:

- proximity to existing or planned network
- the availability and quality of pre-existing infrastructure (e.g. BT's duct and pole infrastructure) that could be leveraged for fibre roll out;
- local demographics, which may affect willingness to pay for superior quality;
- risk of fibre rollout by another operator (in particular, BT), which could undermine the case for investment;
- presence of Virgin Media;
- the timing and cost benefits from rolling-out in large contiguous areas; and
- the attitudes of local authorities towards rollout.

Gathering information on all of the relevant factors and assessing the implications for the viability of altnet rollout will be a considerable challenge, which will lead to additional costs for Ofcom (and hence stakeholders).

Finally, despite the fact that it is proposing to simply roll forward the current price cap for MPF+GEA 40/10, Ofcom is nonetheless developing a fibre cost model in order to support its future regulatory decisions.[30] As such, its proposed approach to setting the cap is unlikely to lead to a material reduction regulatory burden/ costs compared to the 'as now' scenario where prices are set based on Openreach's modelled costs.

[30] Ofcom (2019), Consultation: Promoting competition and investment in fibre networks – Initial consultation on the approach to modelling the costs of a fibre network

3.3 Overall assessment against objectives

Based on the above, the table below assesses Ofcom's proposals against the six objectives identified in Section 2. For each objective, we identify the key impacts of the proposed approach. We also present an overall assessment off the extent to which the approach can be expected to achieve each objective. The overall assessment is presented relative to the 'as now usual' counterfactual, whereby the MPF+40/10 GEA price is set using an anchor pricing approach.

Figure 3 Assessment of Ofcom's proposals versus 'as now' against key objectives in Category 2 areas

Objectives	Key impacts
Supporting BT's incentives to invest	▪ Increase in margins/volumes on copper/FTTC services will likely outweigh an increase in FTTP margins, reducing BT's incentives to invest where there is no competitive threat ✗ ▪ To the extent that the proposals increase the threat of altnet entry, this could increase BT's incentives to invest ✓
Supporting alternative networks' incentives to invest	▪ Likely erosion of (non-BT) access seekers' market share would undermine altnet investment case ✗ ▪ Higher MPF+GEA 40/10 charge may indirectly increase FTTP margins/ allow altnets to grow market share but this depends on degree of substitutability between low and high bandwidths, and is only effective in the proportion of category 2 areas where altnet investment is feasible ✓
Protecting consumers	▪ Would expect higher prices across all Category 2 areas ✗ ✗
Protecting downstream competition	▪ Pressure on access seekers' margins will undermine retail competition ✗ ✗
Robustness to uncertainty and gaming	▪ Identifying boundary between Category 2 (potentially competitive) and Category 3 (non-competitive) areas will be highly challenging ✗ ✗ ▪ Risk of consumer harm from forecast error ✗ ✗
Complexity	▪ Rolling forward current prices is relatively easy to implement ✓

4 ASSESSING TALKTALK'S ADAPTIVE REGULATION PROPOSALS

In this section we assess TalkTalk's proposed adaptive regulation approach against the key objectives identified in Section 2, again focussing on Category 2 areas. We begin by summarising TalkTalk's proposed approach. We then consider the extent to which it can be expected to achieve each of the six objectives described above, relative to Ofcom's proposals.

4.1 Summary of TalkTalk's proposals

In its response to Ofcom's consultation on remedies, TalkTalk proposed an alternative approach, which it refers to as 'adaptive regulation', which explicitly distinguishes between consumer protection pre-entry and investment incentivisation post-entry. This approach is designed to reflect variations in competitive conditions within the market review period as well as geographically. Its key features are:

- a cost-based ex-ante price cap would be imposed on BT at the start of the regulatory period across all areas where BT holds SMP;
- for each area (e.g. postcode sector) this price cap would remain in place until sufficient FTTP-based entry had occurred in the geographic unit (based on a pre-defined trigger);
- at this point the price cap would be replaced by an obligation for BT to keep the price of MPF+GEA 40/10 above a 'price floor' based on an REO cost standard.
- In addition, TalkTalk envisages that some form of safeguard cap may also be required post entry, in combination with the price floor, to protect consumers from the risk of excessive prices.

As such, rather than applying a relaxed form of regulation pre-emptively, in areas Ofcom estimate to be 'potentially competitive' over the next ten or so years, cost-based price regulation would be removed only when and where altnet investment actually happens, based on a pre-defined trigger.

We note that adaptive regulation would represent a divergence from Ofcom's standard approach, whereby the terms of any access conditions are fixed throughout each market review period (rather than adapting over the course of the review period in response to changes competitive conditions). We have assumed for the purposes of our analysis that TalkTalk's proposals are legally feasible and could be relied upon by stakeholders to be implemented (i.e. prices would increase when the trigger is reached).

The table below summarises how TalkTalk envisages its proposed approach could be implemented. We note that TalkTalk's proposals are more detailed/specific in some areas and more open in others (e.g. with respect to if/ how a safeguard cap might be implemented and how the REO level may vary across different regions of the country). As such, we recognise that implementation would require refinement of the proposals, and accordingly we have focussed our assessment on the key high-level principles of the proposals.

Figure 4 Key characteristics of TalkTalk's proposed adaptive regulation approach

	Key features
Granularity of geographic segmentation	Consistent with Ofcom's proposed approach to geographic segmentation, TalkTalk suggests that competitive conditions could be assessed at the postcode-sector level.
Trigger for relaxing regulation	Regulation would be relaxed, within a given postcode segment, when a new entrant has passed over 70% of premises with FTTP. For these purposes, a new entrant is any operator that had less than 70% coverage of the area at the start of the period (including Virgin Media as well as altnets)
Process for assessing trigger	Ofcom would collect coverage data from operators every six months and identify new areas that have passed the trigger threshold. Ofcom would then announce areas where regulation is to be relaxed, with changes implemented 2 months later.
Price cap – pre-trigger	Pre-trigger regulation varies depending on the level of competition at the start of the review period ▪ **BT only areas:** 40/10 and 80/20 are regulated at cost (FAC), without HON. ▪ **BT + 1 areas** 40/10 *only* regulated at cost (FAC), with a HON adjustment ▪ **BT + 2** areas: as per post-trigger (See below). For the purpose of assigning areas into each of the above categories, an operator is assumed to be present in an area when it covers over 70% of premises (at the start of the market review period).
Price floor – post-trigger	The post-trigger FTTC price floor is set on an "adjusted" REO basis. This would be based on the estimated cost to a reasonably efficient operator of rolling out FTTP, adjusted downwards to account for inferior quality of FTTC services. TalkTalk envisages that the estimated REO price would vary across BT+0, BT+1, BT+2 to reflect differences in unit costs (e.g. lower unit costs in urban areas and more competition is likely to result in higher unit costs for an REO, all else equal). In addition, price regulation of 80/20 would be removed (where relevant).
Price cap – post-trigger	A safeguard cap would be imposed in post-trigger areas at some margin (to be determined) above the price floor which is deemed to give adequate protection to consumers from excessive prices.

Source: TalkTalk (2019), Promoting investment and competition in fibre networks, Approach to remedies consultation, TalkTalk submission, Section 6

4.2 Assessment of TalkTalk's proposals against key objectives

4.2.1 Incentivising investment

TalkTalk's proposed approach may have a weaker effect on FTTP margins

For altnets, returns are driven by post-entry conditions rather than pre-entry conditions. As such, the critical issue for altnets' FTTP investment is the impact of TalkTalk's proposals post-entry (i.e. post trigger) rather than the lower prices pre-entry.

As set out above, TalkTalk proposes to set post-entry charges based on an adjusted REO approach. Whilst Ofcom has proposed to set the level of the 40/10 GEA price cap by rolling forward the 2020/21 price (indexed to inflation), rather than based on REO costs, implicit in its approach is an assumption that indexed prices are in some way 'optimal' in achieving the desired outcome of encouraging investment. Therefore, for the purposes of our assessment, we assume that the post-trigger wholesale floor is at a similar level to Ofcom's proposed price cap in Category 2 areas.

The impact of the adaptive regulation approach on increasing FTTC and so FTTP retail prices post entry may be somewhat weaker under TalkTalk's approach. This is because, even if BT's wholesale prices were to rise due to the imposition of a price floor in an areas where entry occurs, access seekers (and BT Consumer) may not necessarily deviate from national pricing (given the advantages of uniform national prices) and raise retail FTTC prices just in postcode sectors where the floor is triggered, particularly in the early years where the proportion of households that fall within these areas is likely to be fairly small. As a result, retail prices could reflect a weighted average of the wholesale prices in pre-trigger areas and wholesale prices in post-trigger areas,[31] in which case the impact on end to end FTTP margins would be dampened. Whilst this is also possible in areas where altnets invest under Ofcom's proposed approach, Ofcom's 'relaxed' 40/10 GEA cap would apply across the entire Category 2 region, which it envisages would amount to around 70% of the country. This could create stronger incentives (for both access seekers and BT) to adjust retail prices accordingly.

On the other hand, it may be reasonable to expect national pricing to break down over time, reflecting a divergence of competitive conditions, and the likely diversity of wholesale supply prices from different suppliers with different network footprints. As noted above, Ofcom's proposed approach of moving from a national to a sub-national geographic market definition implies Ofcom assumes that any indirect constraints on wholesale prices due to retailers' preference for national pricing will not be a significant factor in the future. Further, effective retail pricing could become differentiated on a regional basis even if headline prices are set nationally, with customers in areas with lower wholesale access prices, for example, being offered

[31] This implicitly assumes that access seekers respond to an increase in wholesale charges (post-trigger) by passing through (to a certain extent) the resultant increase in their marginal costs to consumer prices.

promotional offers on 40/10 services, while the focus of marketing in areas with infrastructure-based competitors is higher speed services at higher prices.

TalkTalk's approach will give stronger incentives for BT to invest

As explained above, in parts of the country where Virgin Media is already present and in areas where the prospects of entry or expansion by an alternative player are strongest, the level of wholesale charges is likely to be of secondary importance to BT's investment incentives, with the main driver being the need to retain customers.

However, as also explained above, where the case for entry is weaker (and hence the threat to BT weaker), lower wholesale charges could in fact incentivise investment by BT. TalkTalk's proposals set prices at a lower level compared to the counterfactual (as set out in Figure 4 above, where BT does not face competition currently, prices of both 40/10 and 80/20 GEA services would be set at cost). This means that continuing to sweat its copper assets would be commensurately less attractive, which would improve the incremental case for BT investing in FTTP. In other words, adaptive regulation could provide stronger incentives for BT to invest in non-competitive areas.

Access seekers incentives to invest or commit may be broadly similar to Ofcom's proposals

In theory, where access seekers themselves are potential investors (or potential anchor tenants), lower wholesale FTTC prices could make the 'no invest'/'no commit' case for access seekers *more* attractive, thereby weakening their incentives to invest (or sign up to a risk-sharing/ anchor tenancy agreement). This is because, all else equal, lower wholesale charges would mean higher margins for access seekers that continue rely on wholesale access to FTTC from BT. This would, in turn, make rolling out FTTP correspondingly less attractive.

However, in practice this incentive is likely to be weak. In areas where investment by an alternative network is potentially profitable, access seekers would face the risk that investment would still go ahead, even if they chose not to invest themselves or risk-share. In particular:

- An independent wholesale-only alternative may roll out on the basis of a risk-sharing agreement with other ISPs, such as the agreement already concluded between Vodafone and CityFibre. In this case, the access seeker would be exposed to higher wholesale charges on Openreach's network (since the floor would be triggered) and, if they were offered access on the new network, this would presumably be on less favourable terms than under a risk sharing arrangement.
- Similarly, there is a risk that an alternative vertically integrated operator, that does not offer wholesale access, would invest instead. Again, this would expose access seekers to higher wholesale charges on Openreach's network and, given the lack of wholesale access to the new network, they would also be unable to migrate their customers to fibre.

Further, given the significant scale requirements of FTTP investment, it is likely that it would not be viable for alternative networks to overbuild each other in a large part of the country. As such, access seekers that decide not to invest or risk-share

may not have the opportunity to do so in future. At the very least, they would miss out on any potential "first mover" advantage associated with fibre build.

Therefore, any potential dampening effect on access-seekers' investment or risk-sharing incentives is likely to be modest.

The risk of access seekers retail market share erosion pre-entry is significantly reduced under an adaptive approach

Since regulation is only relaxed post-entry under the adaptive regulation approach, this should address the risk of relaxed regulation resulting in the erosion of access seekers' market shares prior to infrastructure based competition developing.

Prior to entry, the proportion of the market accounted for by non-BT ISPs (and thus available for migration onto new networks) in a given area can be expected to be higher than under Ofcom's proposed approach, making altnet investment more attractive due to a larger contestable wholesale customer base. The longer it takes for altnet FTTP networks to be rolled out, the greater the difference is likely to be.

The imposition of a price floor will reduce both the ability and incentive for exclusionary behaviour from BT

By reducing BT's price cap in areas where rival investment has not occurred, TalkTalk's proposals reduce the incentive for BT to engage in exclusionary conduct, as the ability to generate supra-normal profits later to recoup any foregone revenues is reduced, on the assumption that Ofcom maintains the general approach in later periods.

Another important distinction between TalkTalk's proposed approach and Ofcom's is that, in areas where regulation is relaxed, a price floor rather than a cap is imposed. This is to address the risk that, where an alternative network rolls out fibre, BT may be incentivised to price aggressively in order to deter future entry. A floor may be more effective than Ofcom's uniform pricing obligation at addressing this form of exclusionary behaviour since it actually prevents BT from reducing the price below the REO level, whereas Ofcom's approach simply reduces BT's *incentives* to do so.

However, BT would still be able to target the deployment of its own FTTP network in areas where altnets have rolled out (or have announced plans to roll out), as an alternative exclusionary strategy. Further, since the price floor would only apply to a single FTTC service, BT could undermine altnets' ability to compete by pricing high bandwidth FTTP aggressively. One way of addressing this would be to for Ofcom to apply a "fair and reasonable" charges condition for all bandwidths. This could be accompanied by guidance on the behaviour that would not be considered, fair - for example, setting prices for FTTC 80/20 / G.fast / FTTP services below the 40/10 FTTC floor or setting wholesale and retail prices that would imply a margin squeeze on access seekers.

An adaptive approach would lead to more uncertainty around the future level of wholesale charges when an access seeker is acquiring a customer

TalkTalk's adaptive approach leads to uncertainty around the future level of wholesale charges (relative to Ofcom's proposed approach), for individual customers within the five-year market review period.

This is because the level of wholesale charges in a particular postcode sector is dependent on future competitive conditions, which are uncertain – it will not be possible for operators to perfectly predict when and where entry will emerge and where post-trigger price regulation will apply to any given customer.

Wholesale price uncertainty may dampen retail competition for customers as access seekers will factor in potential post-trigger wholesale price increases to their customer lifetime value calculations. However, this effect is likely to be small compared to the much larger and beneficial competitive effects of fibre entry.

With regards to investment incentives, the implications of any potential uncertainty could be limited because:

- Where any access seeker is considering rolling out itself in a postcode sector or entering into an anchor tenancy agreement, it will know with certainty that (as long as rollout reaches the trigger threshold) the price floor will be imposed post-entry.
- If on, the other hand, an access seeker has no plans to invest in a particular postcode (e.g. because it does not think that the returns will be sufficient, regardless of the level of wholesale charge), then the fact that they do not know with certainty what the level of wholesale charges in these areas will not impact on its investment decision.
- Further, once the new FTTP network (either by itself or another altnet) is built an access seeker may move their customers across to the new network meaning that the higher FTTC price is irrelevant.

It is also worth noting that, whilst Ofcom's proposals provide certainty in relation to the level of the proposed price caps, there would still be uncertainty around the actual level of BT's wholesale charges. In particular:

- As mentioned above, BT may be incentivised to set MPF+GEA 40/10 prices below the level of the cap – indeed Openreach is currently offering discounts on GEA 40/10 in return for volume commitments from access seekers, such that prices in 2018/19 and 2019/20 will be below the cap[32]; and
- Ofcom is not proposing to regulate the prices of bandwidths above 40/10 Mbit/s, giving BT the flexibility to decide how to price these services. Further, as explained above, the relationship between the pricing of higher bandwidth and lower bandwidth services can be expected to weaken over time, as the demand for higher speeds increases.

4.2.2 Protecting consumers

One of the key benefits of the adaptive approach, compared to Ofcom's proposals, is that, since wholesale prices are initially set in line with costs and only rise following entry, this reduces the extent which consumers are required to pay prices above a cost based level (both in terms of the number of customer and in terms of the length of time where prices need to be set at an elevated level). The difference in prices is, on average, likely to occur for several years – if we were to assume that altnets rollout in Category 2 areas at a rate of around 1.25 million homes per

[32] See https://www.openreach.co.uk/orpg/home/products/super-fastfibreaccess/downloads/Openreach_Special_Offer_GEA_Volume_Agreement.pdf

year[33], then it would be around 8 years on average before a given area could expect to see altnet rollout.

As such, consumer costs would be expected to be significantly lower under the AR approach – for example, if we again assume that i) wholesale charges would be around 20% higher under Ofcom's proposals vis-à-vis the 'as now' approach, at the end of the market review period, ii) that 70% of any change in the MPF+GEA 40/10 wholesale price would be passed through to retail prices (on average across all products) and that iii) the price floor is triggered for around 1.25 million homes per year,[34] then we estimate that costs to consumers would be around £850 million higher under Ofcom's approach, compared to adaptive regulation, over the five-year review period.[35]

Further, the adaptive approach is 'fairer' in that, if retail pricing reflects differences in wholesale charges, it is only customers in areas that benefit from entry, in the sense of having more choice in terms of access to FTTP technology, that would face higher prices.

On the other hand, we note that the wholesale charges associated with a particular customer's line may change part way through their contract, in areas where the price floor is triggered which may result in changes in retail prices. However, it is likely that operators will 'price-in' expected increases in wholesale charges to some degree. Further, fact that, under existing consumer protection regulations, customers that face a material increase in retail price (and any change in rental price is a material change) during the contract period are allowed to terminate their contract without penalty will mitigate the risk of mid-contract price rises to a certain extent.

Finally, we note that TalkTalk's proposed approach may still give rise to situations where customers receiving similar services or competitive conditions face different prices. For example, there seems to be an inconsistency in the fact that, in areas that are BT + 1 at the start of the market review period, TalkTalk proposes that Ofcom would regulate MPF+GEA 40/10 at FAC (with a HON adjustment) from the outset but in areas that are currently BT + 0 but where an altnet enters during the course of the review, an REO floor would be imposed. This could result in materially different wholesale charges which could manifest in (albeit, likely small) differences in retail prices, which do not reflect differences in quality/ choice.

4.2.3 Protecting downstream competition

As explained above, the adaptive approach should reduce the risk of dampened retail competition in areas where alternative networks have not invested, since wholesale charges will be in line with costs.

This should in turn ensure that downstream competition is protected in any transition to infrastructure-based competition, which is important for ensuring good

[33] Again, this is equivalent to assuming a total roll out rate for fibre of 2.5 million homes per year (in line with the PRISM estimate referred to above), with half being covered by altnets and the other half BT.

[34] Assuming a total roll out rate for fibre of 2.5 million homes per year (in line with the PRISM estimate referred to above), with half being covered by altnets and the other half BT

[35] This also assumes that there are around 20 million broadband customers in Category 2 areas (which equates to around 70% of all broadband customers) and applies a discount rate of 3.5%.

consumer outcomes not only in areas where end to end competition is not feasible but also in Category 2 areas in the interim period before competition emerges.

Further, as noted above, under Ofcom's proposal identifying the boundary between Category 2 and Category 3 areas ex-ante will be challenging and prone to error. There is therefore a risk that relaxing regulation in all areas that are identified as potentially competitive from the outset may mean that downstream competition is reduced for customers in areas where direct infrastructure competition never in fact emerges. TalkTalk's adaptive approach avoids this risk by relaxing regulation only when and where infrastructure competition emerges.

4.2.4 Robustness to uncertainty and gaming

The fact that the adaptive approach does not rely on pre-determining which areas are Category 2 means that it is not susceptible to the risks associated with defining the boundary with Category 3 areas ex-ante, as described in Section 3.2.4[36] – in particular, by adapting regulation based on actual rather than expected market conditions, it avoids the significant risk of forecasting error associated with trying to predict where competition may emerge.

Further, since the adaptive approach does not rely on information relating to operators' future network investment plans, it avoids the risk of operators gaming regulation by withholding/ providing misleading information on future plans.

4.2.5 Complexity

TalkTalk's proposed approach to setting prices is more complex than Ofcom's

TalkTalk's approach involves Ofcom setting charge controls based on a number of different methodologies depending on competitive conditions. In particular, as set out in Figure 2 above:

- pre-trigger controls (and the wholesale products that are subject to a price cap) vary depending on the number of altnets present at the beginning of the market review period; and
- post-trigger controls are set based on an 'adjusted REO' methodology, which TalkTalk envisages would also vary across different areas (e.g. to reflect variations in new entrant market shares and premises density).

TalkTalk's approach also involves the introduction of a price floor as well as a 'safeguard' cap in post-trigger areas. This compares with Ofcom's approach which uses two methodologies, differentiated between Category 2 (potentially competitive) areas and Category 3 (non-competitive) areas defined ex-ante.

The adaptive approach also means that Ofcom would be required to gather and analyse data on the coverage of alternative networks at the postcode sector level every six months and to adjust prices accordingly. This could contribute to complexity and impose an additional burden on Ofcom as well as operators. However, we note that Ofcom already collects premises-level data relating to

[36] However, ring fencing non-competitive areas may make administering public subsidies administratively simpler, with less risk of effects on competition.

network coverage on a similar periodicity as part of its regular Connected Nations review which would minimize the extent of any additional effort involved.

Applying a cost-based charge control pre-trigger is similar to the current status quo applied in access markets. However, we note that reliably estimating 'adjusted REO' costs (which it envisages would vary geographically) is likely to be challenging. In particular:

- Since there has thus far been limited rollout of FTTP in the UK, evidence on actual costs will be limited.
- Ofcom has indicated that duct and pole access (DPA) could reduce the cost of FTTP rollout. However, there is significant uncertainty around the extent to which DPA can reasonably be expected to reduce rollout costs as it has not yet been deployed on a widespread basis.
- In addition, the fact that the wholesale access products to be costed would be a small part of an overall FTTP product portfolio, including much higher speed services would require assumptions on the optimal tariff gradient to decompose the ARPU to a service level price.

However, as noted above, Ofcom is planning to model the costs of fibre deployment in any case, to inform its approach to future regulation. Therefore, to the degree that Ofcom's proposal aims to optimise the level of prices it 'suffers' from the same concerns (although Ofcom may not directly link the charge control to its estimate of the REO cost). TalkTalk's approach also avoids one of the complexities in Ofcom's approach, that of running very different regulatory approaches in category 2 and category 3 areas.

A price floor may not be sustainable in the longer term

Virgin Media will cover approximately 60% of households by the end of the planned Project Lightning roll out. If we accept Ofcom's view that entry is feasible in 70% of the country, infrastructure entry will lead to BT+2 competitors in much of the country. Ofcom's view appears to be that this is sufficient for BT to be determined to not have SMP, at which point all remedies, including a potential price floor, would need to be removed.

As such, a price floor may be introduced in BT+2 areas, potentially only for a period of a few months, before being removed in the subsequent market review. This creates additional regulatory complexity, whilst providing limited benefits in terms of protection for entrants.

4.3 Comparison with Ofcom's proposals

Based on the above, the table below compares the performance of TalkTalk's proposals with the performance of Ofcom's proposals against each of the key objectives in category 2 areas with 'Harvey balls' indicating the performance of TalkTalk's approach relative to Ofcom's:

- more than half shading indicates TalkTalk's proposals perform better than Ofcom's; and
- less than half shading indicates TalkTalk's proposals perform worse than Ofcom's.

As the table shows, based on our above high-level qualitative assessment:

- TalkTalk's proposals are likely to result in a similar level of FTTP investment to Ofcom's.
- TalkTalk's proposals appear better in a number of areas - in particular, lowering wholesale prices before infrastructure-based entry provides clear benefits to end users and access seekers.
- The only area where TalkTalk's proposals appear inferior is complexity. However, this is likely to be of secondary importance relative to the potential impacts on downstream competition and costs to consumers associated with setting regulated prices above cost, prior to investment, when there are not clear countervailing benefits.

Figure 5 Comparison of adaptive regulation (AR) and Ofcom's proposals against key objectives in Category 2 areas

Objectives	Score 	Overall assessment
Supporting BT's incentives to invest		▪ In areas where competitive pressure is weaker, adaptive regulation (AR) should reduce returns to BT from 'sweating' its copper assets and therefore increase incremental returns from FTTP investment ▪ AR appears better overall, though the difference is likely to be modest
Supporting alternative networks' incentives to invest		▪ Lower price *before* investment under AR should not deter altnet entry, since returns only depend on post-entry price levels. ▪ National price averaging may dampen increase in FTTP retail prices resulting from FTTC wholesale price rises under AR. ▪ AR provides better protection of access seeker's customer scale ▪ AR price floor provides greater protection against exclusionary behaviour by BT ▪ AR could reduce ISPs incentives to support altnet investment but, in practice, the impact is likely to be small
Protecting consumers		▪ By keeping wholesale prices in line with cost pre-entry, AR provides greater protection from excessive prices and links variations in price to variations in customer choice. ▪ Supply-side constraints could mean that by 2026, around 70% of homes will not have seen investment but still face above-cost pricing under Ofcom's proposals

		▪ Under AR costs to consumers could be in the region £850 million lower.
Protecting downstream competition		▪ Lower FTTC prices prior to altnet investment under AR should improve retail competition
Robustness to uncertainty and gaming		▪ Ofcom's proposal to define potentially competitive/ non-competitive boundary ex-ante is more prone to error than the adaptive approach – if, for, example, less build occurs than expected, then consumers will be exposed to high prices without benefiting from investment. ▪ AR avoids this risk as it is based on the *actual* rather than predicted evolution of competition
Complexity		▪ AR appears considerably more complex than Ofcom's proposed approach ▪ However, Ofcom already collects some of the needed data and has developed the required models

Source: Frontier analysis

frontier economics

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