Vodafone response to Ofcom's Wholesale Fixed Telecoms Market Review

Part Two

BUSINESS CONNECTIVITY

May 2020

Contents

Retail Product Market Assessment

Section Summary

1.1 Ofcom's retail market analysis included in the consultation concerning the Business Connectivity Market (BCM) appears limited. Of particular note is the insufficient detail as to how the retail market functions. The retail market is where consumers interact with Communications Providers (CPs) and it is important to understand the role the wholesale market plays in underpinning this. For example what are retailers' relative position in the market overall, what segments make up the market e.g. public sector, manufacturing, retail etc. The information that is included in the consultation document appears to be largely reliant on only wholesale market data.

1.2 We believe that a robust retail market analysis is essential to obtaining the necessary understanding of how the BCM value chain works. It is clear from BCM 2019[1] that insufficient focus has been given to understanding how all retailers effectively compete and whether their competitive actions are focused on serving the domestic UK market or a wider pan EU/ Global retail market. A particular example of this is the retail operations of Colt. Analysis would identify the particular market segments that Colt targets and has had success with. It would also identify the uniqueness of the Colt product offering which distinguishes its globally-focused business model from the more generalised business models of the UK's retailers and network builders which are geared towards both residential and business connectivity.

1.3 Ofcom does not discuss any geographic retail sub-markets and Vodafone's experience is that the retail market is national in scope. Ofcom will find this evidence within the S135 dataset showing the broad range of geographies that customers circuits cover. It is our considered reasoning that Ofcom, as part of its duties, should conduct a robust retail market analysis. This would not only involve collecting data sets about end customers' demands and behaviours. It would also involve collecting data about the types of participating retailers, the market segments those retailers serve, as well as how and why retailers interact with the wholesale market and their relative market share positions.

[1] Appeal Hearing transcript day 4

Question 2.1 Do you agree with our description of retail markets? Please set out your reasons and supporting evidence for your response.

1.4 The retail market analysis section runs for only four pages of discussion under the Leased Lines heading. The section is a very cursory description of the function of leased lines 2.72 – 2.73 and the wholesale inputs used to serve the retail market 2.75 – 2.80. BT Openreach's wholesale pricing strategy is summarised at 2.81. It includes a volume by bandwidth forecast. We do not consider any of this to be an adequate and sufficient retail market analysis.

1.5 The EU Commission guidelines[2] set out:

- NRAs will conduct a forward-looking, structural evaluation of the relevant market over the relevant period.

- NRA should assess specific market characteristics and market developments.

- The starting point for the identification of wholesale markets susceptible for *ex ante* regulation should always be the analysis of corresponding retail market(s)

- NRAs should determine whether the underlying retail market(s) is (are) prospectively competitive in absence of wholesale regulation based on a finding of single or collective significant market power, and thus whether any lack of effective competition is durable.

1.6 BEREC explains[3] that:

- The Explanatory Note emphasises that any geographic analysis should be carried out by NRAs following a modified Greenfield approach. This specifically means that the competitive conditions at the retail level are to be examined applying suitable criteria under the assumption that no SMP-based regulatory intervention occurs at the most upstream-level of related wholesale services (e.g. market 3a, wholesale local access provided at a fixed location).

[2] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018XC0507(01)&rid=7
[3] BoR (18) 213

- After imposing regulatory remedies at the most upstream wholesale level, a "modified Greenfield approach" should be carried out at retail level in order to determine whether ex ante regulation of a more downstream market is necessary as well in order to remedy any remaining competition problem (e.g. market 3b, wholesale central access provided at a fixed location for mass-market products). Depending on the product or service market concerned, suitable criteria for this task might be the number and size of potential competitors, the distribution of market shares, price differences or variation in prices across geographic areas, differences in commercial offers and marketing strategies. To assess supply-side substitutability, actual competitors have to be identified, while potential entrants under SSNIP-conditions should be taken into account either (preferably) at the level of SMP analysis or in market definition.

1.7 In contrast to the guidance on the need to properly review retail markets and in contrast to the proceeding part of the chapter in the WFTMR on the Broadband Retail Market, there is a void of BCM retail market data, analysis or qualitative discussion about the manner in which the leased line retail market functions. The section does not list the name of a single retailer. We are simply informed that MNOs and LLU backhaul are purchased for network build, leased lines may be purchased directly by the retail customer or by another telco and that network aggregators exist. We are also informed that leased lines services may be bundled with other IT and cloud services.

1.8 A Retail Market Analysis requires a detailed understanding of the products that are being purchased, their respective “bundles” and volume by bundle. Figure 2.1 of the consultation provides this for retail broadband, voice, mobile and TV services, but such analysis is entirely absent for business connectivity.

1.9 A Retail Market Analysis requires a detailed understanding of whether there are any key differences in the services or market segments that retailers are engaged in and why this might be.

1.10 Taking our example of Colt, they predominately focus on the connectivity between the UK’s key financial districts and other financial districts across the world. The customers that Colt serves have atypical behaviours which becomes relevant when considering the Colt network as part of the geographic market analysis stage later. If we don’t stop to understand the

customer segments and the behaviours of those particular customers, then we will fail to understand in the subsequent analysis why Colt has network where it does, why Colt customers have found it relevant to support network build, whether more network build can be expected and what this means for other customer segments which are more focused on UK domestic demand.

1.11 There is a need to understand how vertically integrated "network rich" retailers function versus vertically integrated "network light" retailers, and again versus "systemless" retailers. In the Business Connectivity Market review 2019 appeal, it became clear that Openreach is particularly successful in attracting systemless retailers to purchase from its network. Ofcom's witness at the hearing speculated this was due to a lack of willingness of these retailers to buy from vertically integrated network operators who may seek to take over their end customer at the end of a contract cycle. This type of behaviour would need to be understood as it clearly effects the economies of scale that network-building rivals to Openreach will face[4].

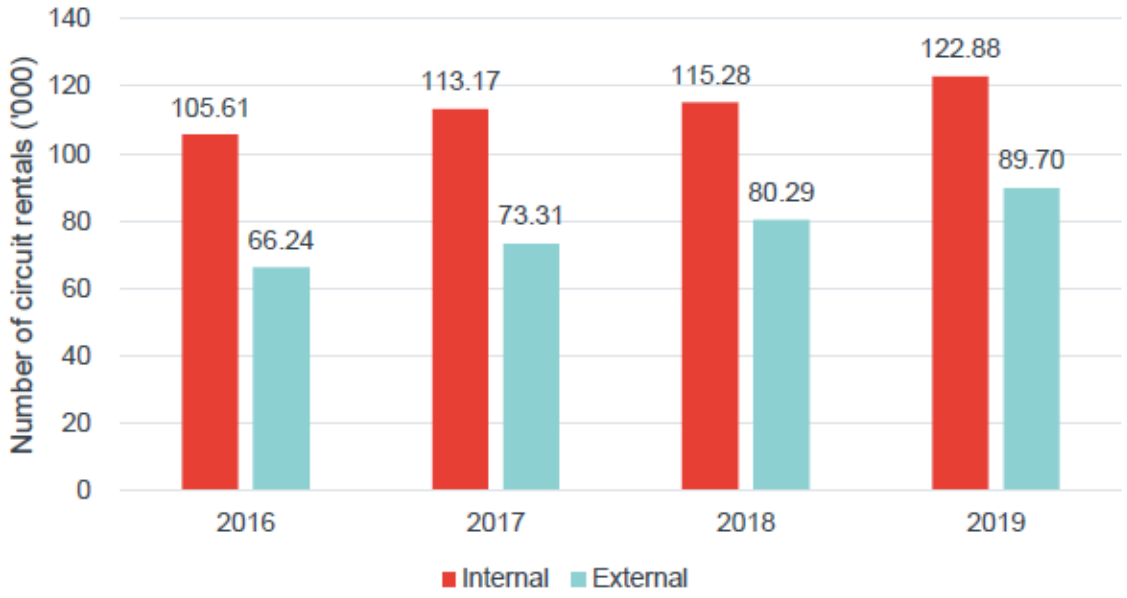
1.12 It is necessary to understand customer behaviour, how and why they chose their retailer, how important - for example - are delivery timescales and therefore how does this drive the behaviour of the various retailers and how these decisions trend over time.

1.13 A Retail Market Analysis could identify market players and their relative market positions, either via market shares or by other methods such as a ranking by size and by market segment. Figure 2.2 within the consultation does this for the ISPs in the broadband market. This will better identify to Ofcom the manner in which resellers and network owners' function in the market, who buys from whom, who has capability to buy from whom, and how this interrelates with Ofcom's policy proposals. In the event that Ofcom finds that many network light retailers rely on particular wholesale service providers, it is relevant to understand exactly why this is the case. The 2019 BCMR inadequately explored or understood the purchasing behaviour of retail resellers, resulting in an erroneous focus upon network rival's sunk network utilisation and a set of false presumptions, greatly overstating the impact of vertically integrated network builders in the overall market place. The subsequent 2020 CAT hearing on this review underlined the necessity to properly engage with retail market analysis to understand who is buying from whom and why that is the case. To do this it is necessary to

be able to identify all the retail market players in order to understand their choices, whether their choices are limited and the implication of regulatory decisions on their future capabilities and behaviours.

1.14 A review of the Openreach RFS illustrates that retail markets may have become more competitive over the period 2016 to 2019. However, this increase in competitiveness at the retail level is in fact based on a greater reliance upon Openreach wholesale services.

Figure 6 BCMR circuit rental volumes ('000) 2016-2019



Source: Frontier Economics calculations; BT RFS 2017-2019

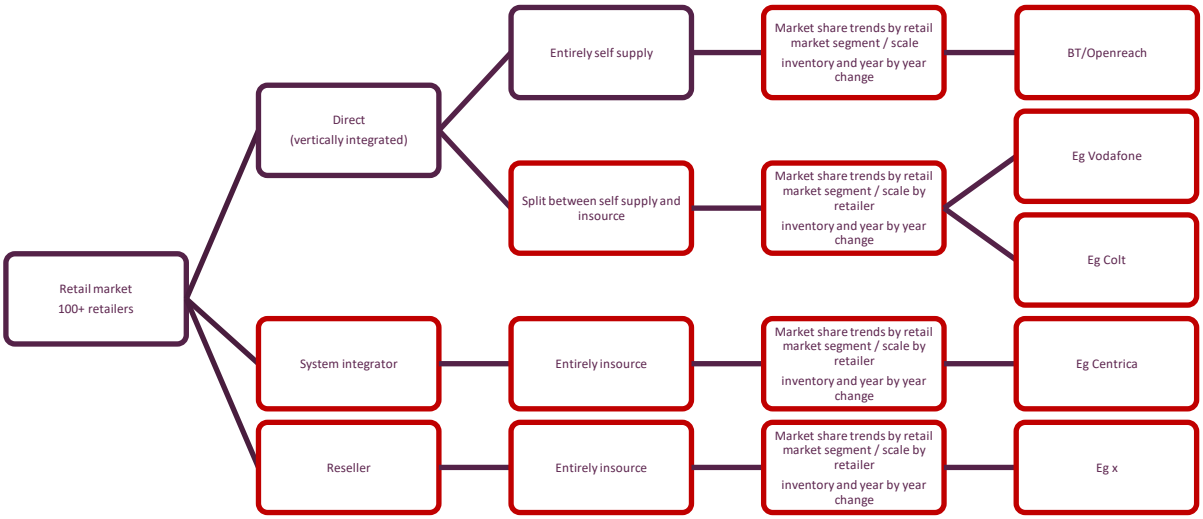
Note: Products considered include: EAD 1Gbps Rentals, EAD LA 1Gbps Rentals, EAD 10Mbps Rentals, EAD 100Mbps Rentals, EAD LA 10Mbps Rentals, EAD LA 100Mbps Rentals, EBD 1Gbps Rentals, WES 10Mbps Rentals, WES 100Mbps Rentals, WES 1Gbps Rentals and BES 1Gbps Rentals.

1.15 From the table we can see that Openreach (OR) BCM sales volumes between 2016 and 2019 grew by 20%. What we might also conclude is that service regulation has been working and downstream retail markets have become more competitive as we can see the OR sales to internal lines of business have dropped from 61.5% in 2016 to 58% of all of its sales in 2019. Conversely we can see that the CP market has grown in reliance on Openreach as CP purchases from Openreach over the period have exceed market growth of 20% and actually resulted in a 26% increase of CP demand upon Openreach services. A robust retail analysis would identify and explore these trends.

1.16 In the Broadband section of the consultation Ofcom considered the topics of retail pricing, customers' experiences and preferences. Whilst understanding that retail Leased Lines services do not have equivalent published prices like the retail broadband market, there is likely to be data available from various sources that will prove valuable to understanding the market more granularly. These will explain the progression between services in the retail market, the challenges and opportunities faced by different retailers and trends in customers' demand such as: increasing their service speeds, seeking greater service resilience, seeking better customer service/satisfaction and any barriers to switching.

1.17 The current level of retail market analysis does not provide the necessary starting point from which to determine the requirements of regulation in the wholesale market and it cannot be considered a robust platform of analysis on which to establish a regulatory framework lasting five years. Wholesale regulation is primarily for the purpose of supporting a healthy, competitive retail market. Not seeking to properly understand the retail market is gravely concerning. Ofcom has this material to hand and it should data mine s135 returns to understand the size and behaviours of the retail market players. It is our view that the red outlined boxes in the flow diagram below need to be fully understood. Without understanding the full range of retailers, in particular those without networks of their own, it is not possible to give appropriate assessment weight to statistics such as the ones where Ofcom show that vertically integrated retailers use their own network for 73% of connections in the CLA. For example, 73% appears on the surface to be a high number but when referenced against the overall market the number drops to circa 20%[5]. When we consider the data from the RFS chart above for the year 2017, we can see that 40% of Openreach sales support non-BT lines of business to compete in the retail market. The retail market has many, many more players than the wholesale market. How they behave is relevant.

[5] We discuss later in the SMP assessment section why using data from historically built networks to predict future network build is problematic


Retail market
100+ retailers
Direct
(vertically integrated)
System integrator
Reseller
Entirely self supply
Split between self supply and insource
Entirely insource
Entirely insource
Market share trends by retail market segment / scale
inventory and year by year change
Market share trends by retail market segment / scale by retailer
inventory and year by year change
Market share trends by retail market segment / scale by retailer
inventory and year by year change
Market share trends by retail market segment / scale by retailer
inventory and year by year change
BT/Openreach
Eg Vodafone
Eg Colt
Eg Centrica
Eg x

Leased Lines Access Market Product Definition

Summary

2.1 Ofcom proposes to find a product market for the supply of leased lines access. Vodafone agrees there is a single wholesale product market spanning bandwidths for leased lines access. Ofcom is presently obtaining new data from market participants enabling Ofcom to update the 2017 data used as a basis for consultation. Ofcom must present this new data for supplementary consultation in a comparable form to that which has already been published. In addition, it is necessary to provide a further richer data set to properly document how the wholesale market supports the retail market.

Question 6.1 Do you agree with our provisional conclusions on product market definition for wholesale networks? Please set out your reasons and supporting evidence for your response.

2.2 We agree with Ofcom's finding that there is a leased lines access market for dedicated fibre services. We agree with Ofcom that any dedicated fibre service including dark fibre together form a single market.

2.3 In the pre-consultation phase Vodafone engaged SPC to conduct an independent market analysis to determine whether or not the market for leased lines had, or was, converging with the market for broadband over the review period. SPC conclusively found this was not the case with the continued existence of separate product markets for Leased lines and Broadband[6].

2.4 Looking at demand side substitution, SPC reported that "*there is an identifiable group of customers who require, and are prepared to pay for, an enhanced set of services over and above those delivered by even ultrafast broadband. Table 1 below sets out the requirements of this segment of customers and compares the ability of broadband and point-to-point leased lines currently in the market to deliver these requirements.*

This table clearly shows that broadband does not have the capability of delivering the key service requirements of high-end customers. Our forward looking analysis set out in Section 7

[6] https://www.ofcom.org.uk/__data/assets/pdf_file/0026/159029/vodafone-annex-fibre-product-market-definition.pdf

above shows that this is unlikely to change in the foreseeable future due to the inherent characteristics of the PON technology used to provide broadband access."

Table 1: Demand side comparison of FTTP and Enterprise Ethernet

Requirement	Features of	
	Broadband	Leased Lines
Ultra high speed up to 100Gbps	✗ Currently only 1Gbps on G-PON, 10Gbps on XGS-PON, though NG PON will be able to deliver higher speeds.	✓
Symmetric upload and download speeds are the same	✓ But not from all providers.	✓
Dedicated path between A and B ends of network.	✗	✓
Dedicated bandwidth allocated to customer	✗	✓

Low Latency.	✗ Dependent on version[7]	✓
Resilience service availability as close to 100% as currently possible, with secondary routing being an important factor.	✗	✓
End-to-end monitoring and management of the service path.	✗	✓

Source: SPC

2.5 When considering supply side substitution SPC reported:

"*There are two reasons to believe that this is unlikely to take place by 2021 and 2026. First, Openreach and other builders of FTTP are focusing their efforts on residential areas of cities rather than business districts where most of the demand is located. To supply these areas would require substantial investment in building networks in a different part of the city or town.*

Secondly, whilst it is theoretically possible for a fibre in a PON to bypass the splitter and be taken directly to a customer site, the network would have had to be dimensioned to have enough spare fibre, over and above the demands of broadband consumers, to meet this need. Further, it would need to have been designed with built-in redundancy to meet the resiliency needs of customers. Unless this has already been done, a significant investment would be required to upgrade a PON to be able to enter the P2P market and enable it to meet the specific demands of a segment of that market. "

2.6 In overall conclusion SPC state:

"*demand of a certain group of customers for high quality service (including very high bandwidth, low latency and resilience) differs from the wider market for broadband access.*

[7] Newer versions of PON technology have low latency that could support services such as 5G networks, but this is not the current standard deployment.

We have also assessed where Openreach and other network providers are building FTTP networks and seen that there is no strong correlation between the location of FTTP and the location of business premises that need high quality services. Further, the timescales set out by network operators for building their networks suggest that it will be at least 10 years before most properties in the UK are passed by fibre.

We have also examined whether the current and future versions of PON will be able to provide the service grade of a P2P network and found that there are certain characteristics of PON that mean this will not be possible.

We conclude, therefore, that a fibre network based on PON and one based on P2P cannot be used for the same purpose by customers, even where a PON is available, and so will not be in the same market in time for the 2021 market review and are very unlikely to be in by 2026. "

2.7 Ofcom considers demand and supply side substitution between Broadband and BCM services in the WFTMR consultation document twice. In the first instance, when considering the broadband market definition analysis, Ofcom concludes that:

"*over the period of this review, broadband and leased line products will continue to have distinct features. Leased lines provide end users with a higher quality service at higher prices. We therefore consider it most unlikely that a business would, in response to a 10% increase in price of broadband services switch to a leased lines*"

2.8 Ofcom continues to conclude regarding supply side substitution for the broadband market definition analysis that:

"*the network architecture required to support leased lines and broadband access services are different. WLA services provide the local connectivity to deliver mass market broadband and other electronic communications services to homes and businesses. The network architecture of an access network for the supply of leased lines does not have this capability. Rather than pre-building a network with access points at most premises across an area such as a town, a leased lines network locates access points near a business district and extends the network to the customer in response to a retail order. Also the operational requirements for the provision of leased lines and broadband wholesale services are different*."

2.9 As Ofcom progresses to the BCM market definition analysis at 6.81 Ofcom states:

"we recognise that business grade ultrafast broadband services could be an alternative to leased lines for some users. It remains, however, that over the period of this review, broadband and leased lines products will continue to have distinct features. Leased lines services provide end users with a higher quality services at higher prices. Specifically leased lines tend to be uncontended, and typically, dedicated (providing security). Looking forward, the expectation is that whilst the vast majority of installed leased lines provide speeds of 1Gbit/s or lower, the demand for higher speed leased lines services is expected to increase."

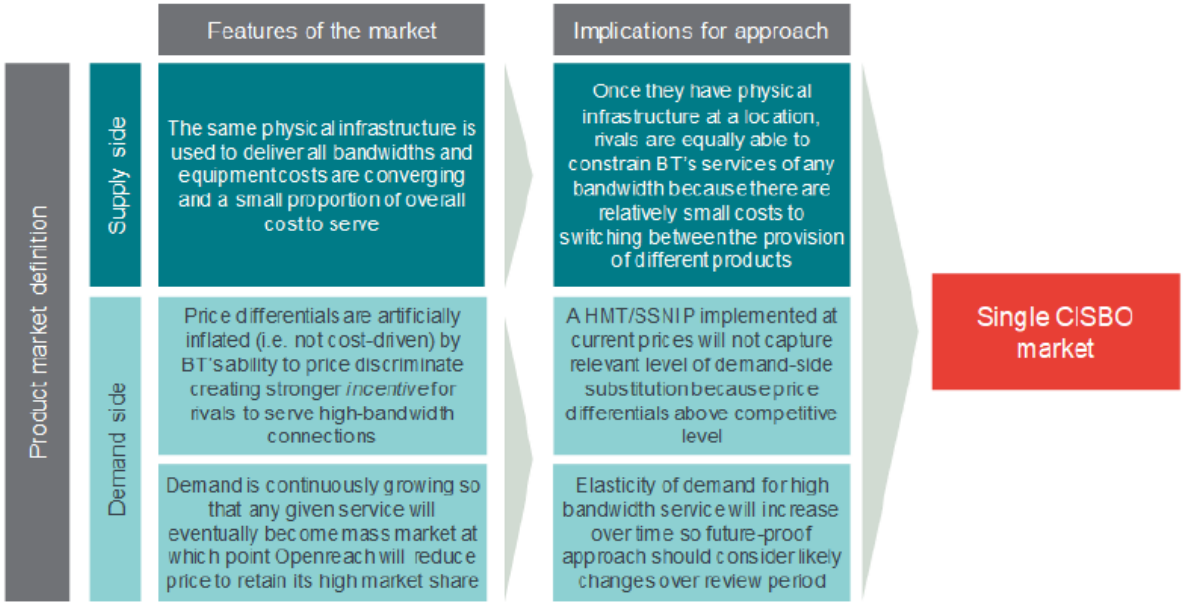
2.10 It is clear that Ofcom agrees with SPC that broadband and leased lines are in different economic markets, meeting different users' needs and supplied using different networks.

There is a single product market across all bandwidths.

2.11 Vodafone agrees with Ofcom and SPC that there is a single leased lines access product market. With respect to the supply side characteristics of this single product market, the key input is the underlying fibre, which can be provided as simply fibre or which can be turned by the vendor (Openreach) or the purchaser (the CP retailer) into an active service and subsequently be used to offer any bandwidth within the product set. The dynamics of the product market are captured by Frontier[8]:

[8] https://www.ofcom.org.uk/__data/assets/pdf_file/0023/124736/frontier-market-definition-cisbo-services.pdf

Figure 2 Summary of conclusions for market definition approach



2.12 Ofcom concurs with this view stating at 6.73

"a) *where a telecoms provider has an existing connection to the customer site it can be used to provide the full range of leased lines services…*"

2.13 Additionally Ofcom finds that

"*where providers do not have an existing extension, the evidence indicates that their ability to supply a customer in response to a SSNIP does not differ by bandwidth, therefore, pointing at similar competitive conditions across all bandwidths*."

2.14 We commissioned Frontier in 2018 to undertake a product market analysis for BCM services. These findings remain relevant to date. Frontier set out:

"Supply side effects

The costs for suppliers to switch between products or offer the full portfolio of products if they already offer one product is minimal:

- *The infrastructure (ducts, fibres and buildings) used to deliver services of different speeds is identical. Equipment costs are a much smaller proportion of the overall cost to supply services than infrastructure costs.*

- *Operating and business support systems (OSS/BSS) are designed to allow different variants of products (i.e. different bandwidths) to be included at little incremental cost.*
- *Aggregation and core networks can support a range of different end user circuits at different bandwidths. Although higher capacities may require technologies such as DWDM, these technologies are becoming increasingly prevalent.*
- *Given the convergence in active equipment costs of providing services at 1 Gbit/s to that of lower speeds (and the expectation that take-up of higher bandwidth products is continuously on the rise), the modern equivalent asset[20] equipment at <1 Gbit/s is the 1 Gbit/s equipment as any marginal increase in initial cost over lower speed equipment is more than offset by the flexibility in being able to potentially upgrade customers without a hardware swap.[21] This means that the cost differential to the provider for these different services is essentially zero. The service model today is then for providers to install flexible equipment that scales bandwidth via software (constraining throughput to deliver the lower bandwidth services) rather than a hardware swap out as customers switch services. This means the cost to the CP of switching between these products is negligible.[22]*
- *Between 1 Gbit/s and higher speeds there is a material increase in the costs of equipment. However, when investing in their networks or points of presence / handovers with other suppliers, the investment (equipment space, racks, power, etc.) is independent of the bandwidth of the Ethernet equipment installed. As such operators can offer both services at and below 1 Gbit/s and services above 1 Gbit/s using common infrastructure and processes and can switch customers between these groups of services incurring only the incremental cost of the equipment itself.*

Therefore, a competitor in this market that is able to effectively constrain Openreach for one bandwidth service, must be equally capable (even if it is potentially less willing given its incentives under current market conditions) to compete with and constrain Openreach for any other bandwidth service. We do not consider that any weight should be placed on differences in market participation (the number of connections served at different bandwidths) by rival infrastructure-based providers as the basis for product market definition. As explained in section 3 these differences are the result of distorted incentives due BT's price discrimination.

In terms of a SSNIP test, if prices were at a competitive level, i.e. reflecting incremental costs, a hypothetical monopolist in one product who increased prices for that product materially above the competitive level would stimulate switching from providers of other products, as the margins available would then be greater than for the other products and the costs of switching to provide the product (other than differences in the incremental cost of equipment for VHB services) are immaterial.

Demand side effects

CISBO products are vertically differentiated – with all consumers ultimately preferring a higher speed and the higher quality of service that brings but varying in their willingness to pay for it. Following the EC framework for evaluating demand side effects, in the absence of supply substitution separate product markets should be defined where one observes a break in the chain of substitution.

The standard demand-side approach to evaluate the existence of a break in the chain of substitution is the HMT/SSNIP test. Much of the BCMR [2016] appeal process in front of the CAT centered on the appropriate application of the HMT, to identify breaks in the chain of substitution between services of different bandwidths.

In essence the SSNIP test applied on the demand side is designed to test to what extent two products are close enough substitutes to be effectively in the same product market. It asks the following question: if there was a hypothetical monopolist providing the 1 Gbit/s services and it raised prices by 5%, would so many consumers switch to the 10 Gbit/s speed products that the price increase would not be profitable? If the answer is yes, then the 1 Gbit/s and 10 Gbit/s products are in the same product market.

This test is typically implemented by using data on switching rates in response to price variation to calculate the implied profit loss of the hypothetical monopolist. However, crucially, the HMT/SSNIP should be evaluated at competitive prices. If switching data is only available at non-competitive prices, then one would need to make assumptions about what switching rates would be at competitive prices and using observed behaviour may lead to incorrect results for the SSNIP. In the extreme, if all services were actually provided by a monopolist, the monopolist would already be setting prices at the profit maximising level. Therefore, a SSNIP

in any service must be unprofitable regardless of the degree of demand-side substitutability and the SSNIP test would lead to the conclusion that each service was in a separate market.

As described in section 3:

Current prices are clearly not competitive and Openreach is price discriminating by inflating the price premium higher bandwidth services, both within the <= 1 Gbit/s products where the cost of provision is essentially the same and between the 1 Gbit/s and the 10 Gbit/s service. This is evidenced by the fact that the price differential between the 1 Gbit/s service and the 10 Gbit/s service is not reflective of the incremental cost differentials, which are the difference in active equipment costs, given that the infrastructure used is the same for both products.

Observed switching rates are not the relevant input to the SSNIP because these are depressed as a result of an artificially high price differential. A 5% increase in the price of the 1 Gbit/s from current prices may not induce a large amount of switching to the 10 Gbit/s service because even under the 5% SSNIP the price differential is still very large. But, were the two services priced to reflect incremental cost differences, a 5% SSNIP is likely to induce significant switching as customers anticipate their future need for bandwidth and bring forward the date of upgrade.

Therefore the test, based on current switching rates, could result in narrower markets being defined than would be the case with a correct application of the test at competitive prices.

As set out above, one cannot implement the HMT empirically using actual switching rates at current prices. What can we say in theory about the real degree of substitutability between these services?

Under perfect competition, prices would be cost reflective and there would be little, if any, differential in prices at 1 Gbit/s or below meaning that demand would be concentrated in the 1 Gbit/s product. A similar dynamic occurred in the Wholesale Broadband Access market. Prior to the widespread entry of LLU operators, BT differentiated by offering a range of bitstream products offering different bandwidths from the customer to the exchange at different rental prices25, even though the underlying equipment used was the same. When LLU operators entered and became a competitive constraint on BT, BT was unable to maintain a premium on higher bandwidth services, moving to a product/pricing structure offering a broadband service that operates at the highest speed possible26 with any remaining price differentiation being based on underlying cost differences reflecting incremental costs for backhaul/peering.

Without a dark fibre remedy a similar collapse in the price differential of CISBO services cannot play out in the market. Consistent with this, Ofcom assumed in the 2016 BCMR decision that the introduction of a DFA product, with a consequent increase in competition at the active level, would result in a sharp reduction in the differential between 1 Gbit/s and 10 Gbit/s services.

Therefore, a break in the chain of substitution would require that consumers who purchased the 1 Gbit/s product under a much smaller competitive price differential would be highly price inelastic. BT has argued that this is the case, that "the nature of demand for VHB services remained distinct from lower bandwidth services and that the increase in demand for VHB services was primarily from new users rather than customers upgrading from the lower bandwidths", suggesting that today's users of 1 Gbit/s services are simply not interested in purchasing a 10 Gbit/s service, regardless of price.

While under current non-competitive prices there may be some differences in the groups buying 10 Gbit/s services and those buying lower speed services, this reflects the fact that Openreach currently has an incentive to raise prices to an extent that only the most inelastic customers remain on the 10 Gbit/s service. But this is not the relevant set of consumers for the elasticity measure used in the SSNIP test – one should consider the elasticity of the marginal consumers under competitive prices, which are likely to be much more elastic.

There is further evidence that points to there being no break in the chain of substitution if prices were at competitive levels.

- *For a number of user groups, offered demand at peak hours will scale roughly linearly with the number of individual end users supported, e.g. the number of broadband customers served by a CP at a given exchange, the number of mobile subscribers covered by a mobile base station or the number of users on a LAN. The distribution of preferences for bandwidth for these customers would be continuous, reflecting the distribution of the number of end users by site, with no sharp discontinuities. At a given price differential there will be a threshold number of users above which it will be cost effective to switch to a higher bandwidth to maintain quality of service. If the price differential is increased this threshold will increase, leading to switching to the lower bandwidth;*
- *On a dynamic basis there are no significant switching costs for changes in capacity at a retail level. While there are some one off costs to capacity increases, as capacity increases over time these will be incurred at some point so a decision to accelerate or*

defer upgrades reflecting changes in differentials between services has little impact on the total cost of ownership (TCO) when they move from one speed to another.

- *We have observed with previous Ethernet generations that when new products come on the market, introduced at an (artificially) high price initially, a small set of consumers take this up; but when the price differential is reduced, migration to the higher speed service follows in a smooth manner with all customers eventually migrating to higher speeds. For example, in the 2016 BCMR Ofcom found a substantial increase in demand for the 1 Gbit/s services since 2013. Higher bandwidth services were being taken up increasingly by typical leased line users, including retail customers. Ofcom's view was that this trend would extend to CISBO services with speeds above 1 Gbit/s over the next review period, especially given the growing adoption of cloud technology by businesses.*
- *Ofcom also found direct evidence of competitive interactions between the 1 Gbit/s service and higher bandwidth services – CPs were found to be encouraging customers to take up higher speed products, including through reductions to price differentials of VHB products. This suggests a positive cross elasticity at the 1 Gbit/s-10 Gbit/s speed interval even at the current inflated price differentials. Ofcom also presented survey evidence in the 2016 BCMR indicating CISBO service users are price sensitive when it comes to their decision of whether to migrate to VHB services (in both directions) even with the currently inflated differentials. "*

2.15 Frontier is very clear in identifying a single product market. The analysis remains unchanged for the forward looking period.

Dark fibre is part of the market

2.16 We agree with this finding. With Dark fibre, the fibre itself as discussed in the section above, is the common component across all the services within the market. The demand by network operators for dark fibre as a wholesale input has continued to. The dark fibre demanded would not be sold on as dark fibre, but converted by the purchaser (rather than the wholesaler) into an active or managed retail solution. Dark fibre will increase in importance over the period of the review as network operators and the end business community look to purchase services with a low environmental impact and to meet climate objectives.

EFM is no longer a part of the market

2.17 Ofcom excluded Ethernet First Mile (EFM) from the market due to its legacy nature as a copper-based non-fibre product. It had diminishing volumes, as shown in the 2017 data set, with 100M Ethernet predicted to become the entry-level Ethernet product by 2019. This situation has proven to be correct. Updated numbers will illustrate a lack of new EFM sales over the period.

Geographic Market Definition

Summary

3.1 Ofcom proposes to find four geographic markets; the Central London Area (CLA), the High Network Reach (HNR) areas, Area 2 Market and Area 3 market. Vodafone believes that Ofcom has incorrectly identified and designated the four geographic markets.

3.2 Ofcom should properly employ the geographic market analysis approach set out by the EU Commission and BEREC. The geographic market analysis approach must relate to the specific supply characteristics of the product market.

3.3 Ofcom undertakes the geographic analysis by replicating the 2019 BCMR methodology for CLA and HNR proposed geographies. It then departs from that methodology to deploy an entirely different methodology for analysing the rest of the UK geography and to impose further geographic market splits without reference to the service and supply characteristics of Business Connectivity Products. The decision to use this WLA approach stems from a desire for administrative convenience, rather than an evidence-based approach that is designed to best service the users of business connectivity services in the UK.

3.4 Vodafone does not consider that applying a "pick and mix" approach to geographic analysis can be compatible with properly identifying and grouping potential geographic competitive variations for Business Connectivity services. Ofcom must therefore discard geographic market analysis alignment with the WLA market – the Area 2 and Area 3 markets that it proposes to find for Business Connectivity Market services. Ofcom should undertake a proper analysis of how competition functions at a geographic level within the UK's Business Connectivity's market. Ofcom should also use the considerable body of evidence that was presented as the BCM 2019 appeal hearing in January this year. Using these data sets will lead to robust, evidence-based Business Connectivity geographic markets.

3.5 It is clear from end customer buying behaviour that retail market demand is for nationwide site coverage. It is our view that the supporting wholesale leased lines access market aligns with this retail demand, being national in scope, with suppliers chosen for their ability to supply a high volume of orders spread throughout the UK, rather than their geographic location. In fact, save for niche suppliers who target particular localised segments, localised

wholesalers struggle to gain any meaningful traction in the UK-wide market place, hampered by their inability to serve a large enough geographic footprint. The geographic analysis requires much closer consideration of the retail market that wholesale regulation underpins.

3.6 It is our expectation that Ofcom should undertake this exercise, finding either a single national wholesale market or possibly a significant national market that co-exists alongside the very much smaller CLA and HNR markets.

Question 7.1 Do you agree with our provisional conclusions on geographic market definition for wholesale networks? Please set out your reasons and supporting evidence for your response.

3.7 In the following section we explain that we do not agree with the application of the WLA Area 2 and Area 3 geographic market analysis approach to defining some of the BCM geographic markets. Defining geographic markets for the leased lines access product market requires not only analysis that considers the competitive differences in the supply of these services by area, but also the grouping of areas with the same / similar conditions. The geographic markets Area 2 and Area 3 are clearly not made up of uniformly homogenous locations. There is evidence that Area 2 has a wide divergence of competition conditions across its localities. For example, 35% of premises have no alternative choice of leased line supplier within 50m and therefore the supply characteristics for this proportion of Area 2 align with those of Area 3.

3.8 The appropriate basis for the geographic analysis is to take the 2019 BCM conclusions as the starting point and work to improve this methodology to achieve more accurate market boundary conclusions. Such conclusions are reflected in the significant body of evidence and market understanding that was highlighted in the recent appeal of this market.

Ofcom's geographic market analysis process should follow on from the retail market assessment

3.9 We set out in the retail market sections our concerns that Ofcom has not sufficiently examined the retail market. This lack of retail market analysis leads to problems in understanding the definition and function of underlying wholesale markets, particularly in prospective geographic sub-markets. Vodafone's experience as a retailer and also as a MNO purchaser, is that the retail market is national in scope. Enterprises purchasing our BCM solutions seek to connect up their geographically disparate locations. Their locations may be completely

national or sometimes regionalised, but over broad regional geographical areas (and rarely confined to central business districts).

3.10 As set out by the EU Commission, a geographic market assessment must be conducted with reference to the retail market. The EU Commission guidance on geographic market definition is as follows:

1. First define the product markets.
   "*Once the relevant product market has been identified, the next step is to define its geographical dimension*."

2. Adopting analysis akin to the product market analysis to determine any geographic sub markets. "*The process of delineating geographic markets follows the same principles as those discussed in the section above in relation to assessing demand- and supply-side substitution in response to a relative price increase.*" "*Demand-side substitution makes it possible for NRAs to determine the substitutable products or range of products to which customers could easily switch in response to a hypothetical small but significant and non-transitory relative price increase. In determining the existence of demand substitutability, NRAs should make use of any evidence of previous customers' behaviour as well as assess the likely response of customers and suppliers to such price increase of the service in question." "In assessing the scope for supply substitution, NRAs may also take into account the likelihood that undertakings not currently active on the relevant product market may decide to enter the market, within a short timeframe, following a small but significant and non-transitory relative price increase*."

3. Analysis should find areas which are homogeneous and can be distinguished in having different competition conditions than other areas.
   "*According to established case-law, the relevant geographic market comprises an area in which the undertakings concerned are involved in the supply and demand of the relevant products or services, in which the conditions of competition are sufficiently homogeneous, and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are significantly different (40). Areas in which the conditions of competition are heterogeneous do not constitute a uniform market (41)."*

4. The size of the analysis unit needs to be big enough to make the analysis feasible, while being small enough to avoid significant variations of competitive conditions.

   "With regard to the choice of the geographic unit from which an NRA should start its assessment, the Commission has frequently stated (42) that NRAs should ensure that these units: (a) are of an appropriate size, i.e. small enough to avoid significant variations of competitive conditions within each unit but big enough to avoid a resource-intensive and burdensome micro-analysis that could lead to market fragmentation, (b) are able to reflect the network structure of all relevant operators, and (c) have clear and stable boundaries over time."

5. The level of pricing needs to be understood to determine if this is due to cost differences or competition.

   "Further evidence relating to demand-side and supply-side substitutability on the relevant market will have to be considered. Regional competitors can indeed exercise a competitive pressure reaching beyond the area in which they are present when the potential SMP operator applies uniform tariffs and the regional competitor is too large to ignore. Moreover, there should be evidence that the pressure for regional price differences comes from customers and competitors and is not merely reflecting variations in the underlying costs."

3.11 The EU Commission documentation has also been adopted into BEREC guidance in 2014. It sets out the following[9], iInitially reiterating the position established by BEREC predecessor organisation:

"*The 2008 Common Position also noted that a geographical unit should satisfy four conditions: (i) units should be mutually exclusive, (ii) the services sold by all operators should be mapped onto the geographical units, (iii) the units should have clear and stable boundaries and (iv) units should be small enough to ensure that competitive conditions are unlikely to vary*

[9]https://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/common_approaches_positions/4439-berec-common-position-on-geographic-aspects-of-market-analysis-definition-and-remedies

significantly within each of them and large enough to prevent a disproportionate burden on operators and NRAs."

"The 2008 Common Position went on to analyse the elements that are necessary to assess the homogeneity of competitive conditions in a given geographical area. The 2008 Common Position emphasised that, in order to conclude that competitive conditions were not sufficiently homogeneous, NRAs should refer in their analyses to (i) the differences in the barriers to entry and in the number of suppliers, (ii) the homogeneity of the market shares of these suppliers and (iii) the potential differences in prices or services (e.g. differences in the prices of the incumbent in different areas or, even if the incumbent has a uniform price, differences between its prices and the offers of the alternative operators)."

3.12 BEREC continues to set out in the updated section of text:

"the starting point of the geographical analysis will normally be the competitive conditions prevailing at the retail level in the absence of regulation in the market being considered."

"It is recommended that, in both instances, NRAs examine the relevant variables for performing a geographical analysis, in particular choosing the appropriate geographical unit and proceeding with the aggregation of geographical areas in order to be able to ensure the homogeneity of the conditions prevailing in areas that are deemed equivalent."

"guidance is provided below on a set of relevant indicators, which require gathering less information, and which NRAs could consider for a preliminary analysis before undertaking a full geographical analysis. BEREC considers that, to determine whether the evidence points to the existence of local geographical markets or a national market, NRAs should employ, analyse and check the criteria for the analysis of homogeneity of competitive conditions.

In particular, the coverage of alternative regional/local infrastructures and the competitive constraints posed at the retail level by active operators based on these infrastructures is a natural starting point for the analysis.

Additionally, the number of operators offering their retail services in a particular geographical area and the (relative) size of these operators, preferably complemented by the local (development of the) retail market share of the operators, may provide factual information about the position of operators in separate geographical areas.

Pricing and price differences are relevant criteria for performing a geographical analysis, but should be assessed and interpreted carefully. In particular, the analysis of prices must take place within the relevant context of the specific market analysed. If prices of the incumbent and alternative operators are geographically uniform, that is, do not differ between geographical areas, this may be an indication of insufficient geographical variations in competitive conditions to justify the definition of subnational geographical markets."

3.13 Both the EU Commission and BEREC make very clear that there are a) a number of analysis stages designed to sense check initial analysis on network coverage and b) the objective is to find areas that are in themselves homogenous and obviously heterogeneous to other areas. As with product market definition, the starting point is an understanding of the retail market. The BEREC guidance gives in addition some very clear and simple tests which can be performed:

1. How rival networks operate to assist the retail market competition
2. Retailers' comparative market share by geography
3. Pricing analysis to understand whether prices offered by the range of suppliers in the market are geographically varied

As well as a retail analysis it is necessary to understand the supply of wholesale services and how this varies between wholesalers and different groups of retailer

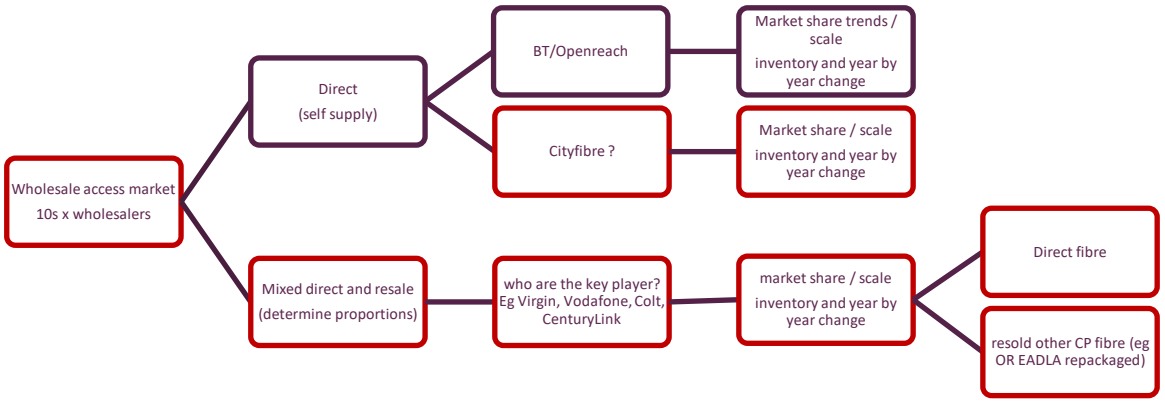
3.14 Prior to getting into the geographic market definition exercise, it is necessary to understand how the wholesale market operates in support of the retail market. This will identify the capability of retailers to vary their purchasing geographically and the ability of rival networks to effectively provide wholesale alternatives to Openreach.

3.15 It is necessary to uncover whether there are any trends in how wholesale services are bought, limiting wholesale competition from developing as a result. For example, there are retail market behaviours which influence the structure of the wholesale market:

1. BT lines of business only buy from Openreach.
2. Retailers, particularly those who sell both broadband and leased lines, who have invested in a local presence with Openreach by buying Openreach Accommodation/Backhaul aggregation at BT exchanges will prefer to buy Openreach EADLA. This is due to the low EADLA price and the pre-existing network investment which allows them to converge and aggregated services using more economical, larger bandwidth backhaul. Therefore in geographic locations where many retailers have located at OR exchanges to buy accommodation and backhaul aggregation, there will be extremely limited opportunities for other wholesale network providers to sell BCM services to these retailers. To date, this fact has been entirely overlooked in the geographic market analysis.
3. The situation for Resellers and system integrators is dependent upon their inventory scale which will determine their capability for geographic investment and the overall number of points of handover they can support (1 handover point or a few points dotted across the UK).
4. Some wholesalers (Openreach, and recent entrant CityFibre) only sell their own fibre, whereas other wholesalers sell their fibre together with Openreach fibre (EADLA that has been combined with exchange backhaul).

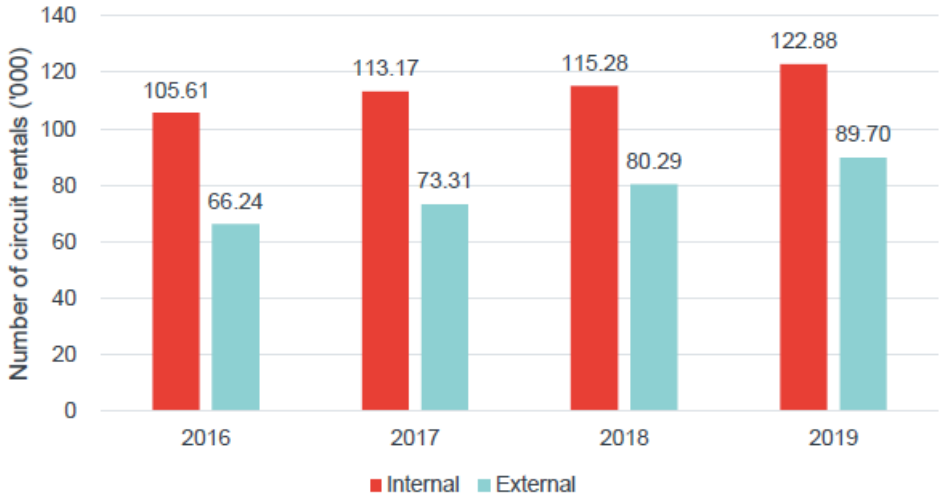
3.16 From the s135 data Ofcom holds, we need to extract the data that shows how effective full self-supply / rival network deployment is in supporting the wholesale and retail markets. At present the wholesale market analysis doesn't properly show the intermediate wholesale market function. With the expectation that network competition can be developed to increase the competitiveness of the Business Connectivity Market, a fuller understanding of the market layers and interplay is therefore more critical.

3.17 We illustrate the necessary analysis in the schematic below:



3.18 We expect that Ofcom will be able to detect trends by market participants, such as the following trend we observed using regulatory financial statements (RFS) in the absence of access to the richer S135 data set:

Figure 6 BCMR circuit rental volumes ('000) 2016-2019



Source: *Frontier Economics calculations; BT RFS 2017-2019*

Note: *Products considered include: EAD 1Gbps Rentals, EAD LA 1Gbps Rentals, EAD 10Mbps Rentals, EAD 100Mbps Rentals, EAD LA 10Mbps Rentals, EAD LA 100Mbps Rentals, EBD 1Gbps Rentals, WES 10Mbps Rentals, WES 100Mbps Rentals, WES 1Gbps Rentals and BES 1Gbps Rentals.*

3.19 From the table we can see that Openreach Business Connectivity market sales volumes between 2016 and 2019 grew by 20%. What we might also conclude is that service

competition-based regulation has been working and downstream retail markets have become more competitive, as we can see the Openreach sales to internal lines of business have dropped from 61.5% of all of its sales in 2016 to 58% in 2019. Conversely however, we can see that the CP market has grown in reliance on Openreach. CP purchases from Openreach over the period have exceed market growth of 20% with a 26% increase in CP demand for Openreach services.

3.20 The geographic market analysis entirely focusses on supply side analysis. It fails to consider the demand side behaviours and limitations in the value chain.

3.21 There was a polarisation of views in the 2019 Business Connectivity Market Review appeal between Ofcom and Vodafone on the prospects for BCM competition. This arose from Vodafone taking a view based on both supply side and demand side market factors, while Ofcom has chosen to focus on a limited supply side dataset.

The Business Connectivity leased lines market does not have the same supply characteristics as the WLA market Area 3 and Area 2 geographies.

3.22 Ofcom's approach to geographic market analysis is based on past market reviews which have

"focused on existing competition conditions for each market in isolation (in particular WLA and BCMR reviews)."

3.23 Whereas in

"the period of this review we expect the potential for new network build to be much more dynamic than in the past. We focus not only on existing competitive conditions but also importantly, on how we expect the competitive environment to evolve over the review period based on new network build. Moreover much of this new build is expected to be MSN with supply the full range of services. Hence these competitive dynamics will apply across WLA and LL Access."

3.24 In the WLA section of this response, we discuss our concerns that Ofcom has substantially over estimated the prospects for network overbuild by new FTTP networks. This is covered in greater length in the accompanying SPC report and while we do not repeat those comments in this section, they are nonetheless equally relevant in this context.

3.25 The product market analysis of the leased lines access market fundamentally contradicts the geographic market analysis of potential geographic sub-markets. When considering the

product market analysis, Ofcom states firstly in the section on the WLA product market definition:

"*the network architecture required to support leased lines and broadband access services are different. WLA services provide the local connectivity to deliver mass market broadband and other electronic communications services to homes and businesses. The network architecture of an access network for the supply of leased lines does not have this capability. Rather than pre-building a network with access points at most premises across an areas such as a town, a leased lines network locates access points near a business district and extends the network to the customer in response to a retail order. Also the operational requirements for the provision of leased lines and broadband wholesale services are different*."

3.26 And again in the leased lines access product market definition:

"the network architecture required to support leased lines and broadband access services are different. WLA services provide the local connectivity to deliver mass-market broadband and other electronic communications services to homes and businesses. The network architecture of an access network for the supply of leased lines does not have this capability. Rather than pre-building a network with access points at most premises across an area such as a town, a leased lines network locates access points near a business district and extends the network to the customer in response to a retail order. Also the operational requirements for the provision of leased lines and broadband services are different."

3.27 More detail about supply side substitution is provided in Annex 6 and 7. Of importance when considering the ability of WLA networks to supply leased lines services are the following points:

"A7.10 Virgin Media's network currently covers approximately 50% of UK premises. Broadband services are provided over either a cable network (originally provided to support cable TV) or an FTTP network (the majority over cable). The cable networks (ie the specific coaxial cables used to connect to end customers cannot be used to provide leased lines. However, Virgin Media can use spare fibres from the POP to the cabinet for leased lines. To connect to businesses it then must run a cable from the cabinet to the business premises. To the extent possible it can reuse the ducts carrying coaxial cables to also carry fibre leased lines to businesses. In areas where Virgin Media has installed fibre to the premise as part of project

lightening, these fibres cannot be used for leased lines without reconfiguration as it is configured in the same way a GPON and so the points raised above for broadband only networks would apply."

3.28 The key part of this commentary is that the majority of the Virgin Media network is broadband specific and the supply of leased lines would require a network extension in the same manner in which it would be required by a leased lines network. Applying the term MSN to the entirety of the networks owned by companies that today seek to serve the broadband and leased lines market segments using distinct network facilities is misleading. Virgin has distinct network capabilities by geography offering predominantly residential cable TV, a very small amount of new build FTTP and a geographically distinct leased lines network. These services do not coexist throughout the Virgin network and therefore the Virgin network can effectively be subdivided into geographically disparate network capabilities. BT has a universal copper network which is in varying stages of transition to FTTP. The FTTP overlap with leased lines demand is limited and consequently the BT network also has disparate capabilities that cannot accommodate all services types today or for the period of the coming review.

3.29 Ofcom explains that CityFibre (who is in the process of buying FibreNation)

"*commences build in a town/city based on securing an anchor tenant such as the local authority. This phase of build provides leased lines to the anchor tenant and generates revenue to contribute to covering capital costs of the initial build. The build will focus on deploying to the anchor tenant's location, but will also build a central spine network. Within these towns Cityfibre may then build out an FTTP network to serve broadband. This involves extending the network from the spine into residential areas, providing flexibility points at each potential customer premise passed. Selection to towns is based on several factors, and is driven by discussion with an anchor tenant for broadband*.

3.30 CityFibre's MSN network is extremely small covering circa 300,000 broadband premises when counting both the CityFibre and FibreNation deployments.

3.31 The key feature of differentiated competition in business connectivity markets, as set out in 2019 BCMR, is how distant a premise is from one or more rival leased line networks. In BCMR 2019, Ofcom uses its model to establish that a rival network has to be at least within 50m of a premise to be a relevant competitive alternative to the premise. The WLA geographic

analysis does not measure the availability to provide leased lines services and includes networks – namely Virgin Media and CityFibre - that are clearly unable to offer leased lines services or be extended to offer leased lines services.

3.32 Using the WLA geographic market definition approach and seeking to apply it to the Business Connectivity access market is therefore incompatible with the requirements of the geographic market guidelines which require "*Once the relevant product market has been identified, the next step is to define its geographical dimension*." This means the geographic market analysis needs to directly relate to the specific product market.

3.33 In order to reach a robust, evidence-based outcome, it necessary for the geographic market analysis approach to consider both the realities of the retail Business Connectivity market and the wholesale leased lines access product market.

3.34 The wholesale leased lines access product was the basis of the geographic market definition findings in the 2019 BCMR for BT-only areas and the BT+1 areas.

The Area 2 and Area 3 groupings are obviously wrong and not sufficiently homogenous

3.35 Ofcom has, over successive Business Connectivity market review cycles, established a core process of geographic market analysis that is a detailed analysis of the proximity of rival leased lines networks. This involves the measurement between a potential premise and a leased lines network duct / network flexibility point from which new service connections can be made. In 2019, Ofcom's model resulted in a 50m network extension distance. There has been no such evaluation process for Areas 2 and 3, or even a discussion about such an evaluation process.

3.36 The resulting geographic market definitions have substantially changed between 2019 and 2021. This is shown in the two tables below:

The table from the consultation document below shows the results using the 2019 BCMR approach.

Table A8.8: Postcode sectors with similar levels of rival network coverage

Number of rival leased lines networks	Average number of rival networks with presence	Number (% share) of postcode sectors	Number (% share) of customer ends connected in 2017
BT only	0.3	5,723 (57%)	30,755 (48%)
BT plus one rival network	1.0	3,324 (33%)	21,075 (33%)
HNR	2.4	304 (3%)	3,978 (6%)
CLA	4.3	275 (3%)	7,988 (13%)
Total UK excl. the Hull Area	0.8	9,974 [112]	63,828 (100%)

Source: BCMR 2019 analysis. Note that the sum of percentages may not exactly equal 100% due to rounding. Additionally, some invalid or missing postcodes have been excluded.

3.37 Whereas the table below shows the WFTMR proposal geographic market split:

Table A8.13: Summary of results of geographic market analysis for LL Access markets

Geographic Market	Count of postcode sectors	Number of connections in 2017 [116]	% of UK postcode sectors	% of UK premises
CLA	275	7,988	3%	12.5%
HNR	304	3,978	3%	6.2%
Area 2	5,538	38,866	57%	60.9%
Area 3	3,515	12,964	36%	20.3%

3.38 This fundamental change of methodology results in substantially different classifications for a large number of business premises[10]. The tables show that while in 2019 48% of premises fell into the BT only geography, for 2021 this falls to 20.3%. Meanwhile, the premises in BT+1 areas has increased from 33% in 2019 to 60.9% in 2021. It is inconceivable to believe that competition conditions to this number of sites will have changed between 2019 and 2021 or could change by 2026.

[10] There is a small alteration from BCM 2019 which uses MISO whereas the WFTMR is based upon Connected Nations.

3.39 The task of the geographic market analysis is to group sufficiently homogenous geographic areas together. Ofcom, to date, has used a dig distance/build distance buffer. In the 2019 BCMR this was estimated by Ofcom as 50m for its modelling work. It is worth recalling the market evidence that the rival median network extension for these geographies is between 15.1 and 17.4 radial meters. This means that the numbers of customers unable to be served by a rival network in real life will be much higher than the market definition boundary estimate.

3.40 Table A8.9 shows that homogenous areas grouping has not been achieved for each geographic grouping proposed – Area 2 and Area 3. We instead have heterogeneous groups within each Area:

Table A8.9: Network analysis for leased lines only networks[113]

	CLA	HNR	Area 2	Area 3
Number of postcode sectors	275 (3%)	304 (3%)	5,536 (58%)	3,511 (36%)
Number of connections in 2017	7,988 (13%)	3,978 (6%)	38,866 (61%)	12,964 (20%)
Average network reach (50 metre buffer distance)	4.3	2.4	0.8	0.1
Proportion of businesses with N rival networks within 50m				
N=0	4%	4%	35%	89%
N=1	6%	12%	53%	10%
N=2	9%	44%	9%	1%
N=3	17%	26%	2%	0%
N=4	18%	9%	0%	0%
N=5	17%	4%	0%	0%
N=6+	29%	1%	0%	0%

Source: BMCR 2019 data and Ofcom further analysis.

- Area 3 is a relatively homogenous area grouping. It shows that a very high proportion, 89% of premises, having no network rival within 50m. A small proportion are not homogenous with the rest of the group - 10% having 1 rival within 50m and 1% having 2 rivals within a 50m distance. The 11% presumably will have fallen into Area 3 due to the use of the postcode sectors, although this could be corrected via exceptions to make the market perfectly accurate.
- Area 2 fails to have high homogeneity across the premises included in its grouping with this being limited to 53% of the grouped areas. 35% of businesses in Area 2 have no rivals at all

within 50 meters. There is no data presented which shows the actual distances premises are from a network. However in the 2019 BCMR, for the BT-only geography, rival networks were an average distance of 1,145.6[11] meters away. We are consequently left to presume that 35% of customers in Area 2 have no rival within 50meter could actually be on average 1,145.6 meters from a rival network. Area 2 also includes 11% of premises which have 2 or 3 rivals within 50m.

3.41 This evidence shows obvious errors with the proposed Area 2 grouping. Within Area 2, 35% of premises do not have an alternative network choice within 50 meters, and should therefore be reallocated to the Area 3 group with whom they share homogenous characteristics.

Ofcom should abandon the WFTMR BCM geographic analysis and instead return to the BCM2019 analysis, making adjustments to reflect the undisputed body of work presented in in the January 2020 BCMR Appeal

3.42 The geographic market analysis process should start with the 2019 BCMR geographic market boundaries and refine that analysis in light of improved market knowledge.

3.43 We would advocate that Ofcom address a small number of process improvements to the network extension calculation which would enable the identification of a more accurate catchment of homonegeous areas.

1. Build costs - Ofcom should use actual Operator costs rather than Openreach ECC charges for its dig distance model. Ofcom hold extensive factual build data from S135 information requests sent to Communication Providers. This data is available for 2017 and has been requested for 2018 and 2019.
2. Market price - Ofcom should then use the price that a CP can charge and reflect that charge rather than the prevailing Openreach SMP price when calculating feasible extension distances. In the 2019 BCMR final statement Ofcom noted:

   "*We disagree with Vodafone's view that assuming rivals only need to match BT's prices to encourage BT customers to switch provider is wrong as providers usually need to offer significant discounts. While we recognise that rivals may offer discounts to encourage BT customers to switch provider, we are of the view that for the purpose of the model*

[11] BCM 2019 final statement Table A20.25

(i.e. to provide an indication – rather than a precise reflection – of the dig distance a hypothetical rival to Openreach may be willing to dig), not modelling discounts is reasonable as discounts can vary widely from provider to provider. "

In the more recent CAT 2020 BCMR Appeal[12] CityFibre's witness statement in support of Ofcom demonstrates Ofcom's response was wrong and should be reconsidered.

3. The model should have a reconciliation with real life experience of dig distances. For example, in 2017 the market data showed that the median radial dig distance was 18m in BT-only areas, 14m in BT+1 areas, 10m in the CLA and 9m in HNR areas.

3.44 It is our expectation that geographic market analysis utilising a network reach model (and corrected as above) will result in "BT-only" areas very similar to those set out in the BCM 2019 decision.

3.45 The key outcome changes will be felt in the remaining areas. It is our expectation that the "BT+ 1" area will grow marginally to account for a movement of postcodes sectors from the HNR and CLA areas as these are presently misallocated as we show below.

CLA and HNR

3.46 The greater level of information that has been presented during the January 2020 BCMR CAT Appeal process makes it clear that the current geograhic market boundaries around the CLA and HNR are erroneous. The market definition was not appealed during this hearing as the extent of heterogeneity across the area was known only to Ofcom. The CAT panel called into question whether it should be the geographic market definition which was being challenged [Day 1 transcript start at page 66]. The CAT subsequently found it necessary to make comment on the market definition in the Judgment: "*whilst Ofcom denied that there were significant differences, it was clear that infrastructure network coverage and customer characteristics were not uniform over the whole area. It might be thought that this would cast doubt on the correctness of the geographical definition, but the Appellants took no point on this."*

[12] See CityFibre Witness Evidence relating to CAT Case 1330/3/3/19
TalkTalk Telecom Group plc and Vodafone Limited v Office of Communications (BCMR 2019)

3.47 Ofcom's Appeal witness evidence has shown that the current CLA lacks any level of homogineity. We can see this if we look at Table 7.6 / A8.9 of the WFTMR and add to that the data sets from the Appeal Judgment[13]:

CLA area						
WFTMR Table 7.6 - high level limited data presented to show homogeniety				BCM Judgment – supplementary detail showing hetrogeneity across the area[14]		
Average number of rival networks	Proportion of busnesses with x rivals X= 0	Proportion of busnesses with x =1 rival	Proportion of busnesses with X 1 – 5 or more	Postcodes where Openreach is the sole network	Propotion of the CLA sales for which OR is the sole supplier	Proportion of CLA postcodes that do not require leased lines
4.3	4%	6%	90%	38%	12%	72%

3.48 January 2020 BCMR Appeal case evidence that shows the importance of considering demand characteristics:

[13] CAT Judgement at para 214 "*Her evidence showed that in 72% of postcodes there were no leased lines at all, so the question of rivalry did not arise. In 38% of the postcodes where there were active leased lines Openreach was the sole supplier. These postcodes accounted for only 12% of leased lines in the CLA*. "

[14] Additional confidential data (unseen by Vodafone) was supplied which identified on a mapped basis the heterogeneity across the area

- The network reach analysis needs to be considered in light of demand for services by systemless/system light retailers "*BT's high market share is mainly driven by it being used as a wholesale supplier to other CPs*".[15] These CPs seemingly have restricted demand to buy from vertically integrated wholesale/retailers whom Ofcom concentrates its network reach analysis upon "*I consider that one explanation why Openreach is so successful as a wholesale supplier is contained in the Cartesian report, submitted by Vodafone in response Ofcom's consultation on the BCMR. CPs are mindful of the fact that their partners are often also competitors at retail level. They are hesitant to fund, through their wholesale purchase, a partner to bring the CP's end customer on-net, lest they "eat their lunch" down the line. The CP does not wish to enable a situation whereby its partner would have a competitive advantage at the retail level when the CP's end-customer contract comes to the end of its term*."[16]

3.49 January 2020 BCMR Appeal case evidence that shows examples of geographic heterogeneity in the CLA:

- "*Leased line customers are particularly concentrated in the City of London*" which is a small sub set of the overall CLA.[17]
- Vodafone provided analysis on the postcode sectors of SW3 1 and E1 6 in witness evidence. Ofcom responded that these were postcode sectors on the periphery of the CLA and accounted for a (redacted) presumably low number of active circuits connected in 2017 and a low number of overall inventory circuits[18]. "*For example, the postcode sector consists of and is an area of London most famous for its independent shops, art galleries, cafes, bars and restaurants. These are not typical leased line customers*." Ofcom clearly found that the areas we had highlighted lacked homogenegity compared to the hot spot areas the Ofcom analysis prefered to highlight.

[15] Kalmus 1 para 121
[16] Kalmus 1 para 124
[17] Kalmus 1para 58
[18] Kalmus 2 para 14 and 15

- There is a large variety of demand for leased lines across different postcodes leading to a lack of economies of scale. For example some postcodes have demand for 2 or less circuits, 50% of postcodes have a demand for 12 or less, while another 50% have a demand for 12 or more circuits[19].

3.50 The BCM CAT Judgment sets out:

- There are 38% of postcodes in the CLA where Openreach is the only network. The 2019 BCMR consultation process did outline that 18 postcode sectors[20] within the CLA did not meet the CLA criteria. However this fact is now in the public domain and must be acted upon. We do not agree with any rationale that includes postcodes/sectors within market boundaries where the market conditions do not warrant that inclusion. As suggested for Area 3, we consider that postcodes that do not match the geographic criteria should be excluded from the market.
- The CLA area includes a substantial proportion of postcodes, 72%, that do not use leased lines. These postcodes should be excluded from the CLA area.

  There are substantially differnet conditions within the CLA depending upon the retail estate found at a location. Ofcom presented evidence that a multi-tenanted building typically had a postcode to itself and would have demand for multiple leased lines to the various businessess occupying different floors within the building. These types of buildings were more likely to have a number of rival networks connected via their own duct infrastructure to the basement of the building. Ofcom clearly holds relevant information to better analyse the connectivity of buildings. We estimate that these types of buildings/postcodes in the CLA is roughly a total of ✂. Ofcom can very simply use the information returns that it obtains to analyse the connectivity of these sites, a task Ofcom performed with relative ease in its preparations for the 2020 BCMR Appeal. Competition to individual floors within the building may have different competition conditions which should further be explored. Ofcom will again have an understanding of the types of average costs involved in extending networks within buildings. This is data that was collected from network builders as part of the S135 activity.
- It was clear from the terminology used within the January 2020 BCMR CAT hearing, even though the full data was not shared on a non-confidential basis, that the CLA has

[19] Kalmus 2 para 23 and 24

significant degree of heterogeniety, with a clear difference in conditions between smaller terrace-style buildings and tall multitenanted buildings which Ofcom referred to as the hot spots areas. Ofcom should separate out in its analysis to show these differences.

3.51 The WFTMR 2021 geographic market analysis for the CLA and HNRs could use the 2019 BCMR outcome as a starting point. It would use the 50m buffer analysis as the first pass to locate the postcode sectors that need closer analysis. The subsequently reduced postcode sector list of just 579 CLA postcodes sectors (rather than the full list of 9,626 postcode sectors) should then be analysed further to establish if they accurately meet the thresholds of being sufficiently homogenous. A similar approach for the 304 HNR postcodes should also be followed.

3.52 The subsequent analysis must be developed to make use of the data that Ofcom has at its disposal, using the best available evidence to define accurate geogrpahic boundaries. This task is not onerous and is a portionate way to ensure that regulation is designed in the best possible way to safeguard the consumer interest. This should seek to identify not just network supply homogeniety, but also demand homogeniety and consider how demand relates to supply with a reference back to the retail market analysis. For example, if it is the case that the CLA has a higher number of systemless resellers who tend to buy from Openreach, this should be weighted into the prospects for network reach.

3.53 It is clear from the January 2020 BCMR Appeal that Ofcom holds a significant volume of market data, at a far more granular and insightful level than the data that has been made available to stakeholders. It is our reasoned position that Ofcom would not be conducting a full and fair consultation process if it fails to use this insight to help inform outcomes. Ofcom must use this information to identify and distinguish postcodes taking account of those areas:

1. with no present demand for leased lines;
2. with no rival infrastructure to buildings what so ever;
3. that have a low levels of rival infrastructure;
4. that have buildings with dense levels of rival network ducts;

3.54 This material should be set within the wider context of the workings of the wholesale market, coupled with an understanding of how that market underpins the workings of the retail market to benefit end consumers of business connectivity services in the UK.

Backhaul Connectivity Market Definition

Summary

4.1 Ofcom has identified two separate markets for exchange backhaul, proposing an inter-exchange connectivity product market and a trunk market. The inter-exchange connectivity market covers connections directly between BT exchanges, with the assumption that CPs using the backhaul connectivity products in this market will either: purchase inter-exchange backhaul products in a daisy chain formation until they reach a BT exchange where they have a direct fibre presence (or perhaps buy fibre from another CP, should that option be available). The exchange backhaul connections between a BT exchange and a CP network are considered part of the trunk market.

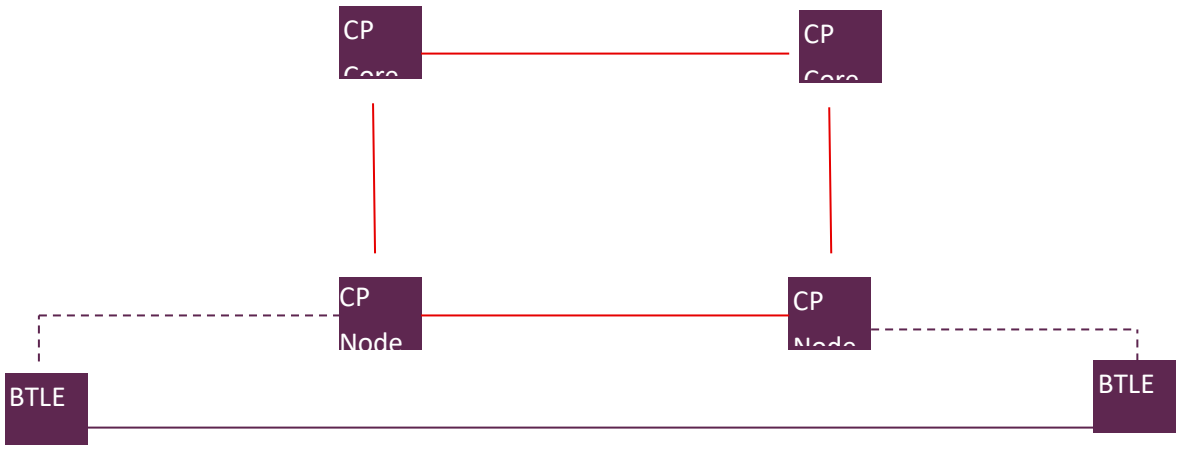
4.2 By taking a BT-centric approach and only including the connections between BT exchanges, and choosing differentiate exchange backhaul connections that are between BT exchanges and CP nodes Ofcom risks failing to properly capture the full scope of the backhaul connectivity market. For reasons of network resilience, efficient network planning, environment considerations and cost it would be more accurate to also capture the connectivity from the BT exchanges to the CPs' own network connection point. This is an essential backhaul link enabling connectivity between networks that needs to be captured within the market scope. Focusing only on BT to exchange to BT exchange connectivity fails to adequately represent how the market functions, and places the essential interoperability links between BT and CPs outside the market scope, leaving these vital links without a remedy.

4.3 The very limited topology Ofcom is proposing is illustrated below, with only inter BT exchange connectivity captured:

4.4 Ofcom could better reflect the workings of the market and the need for backhaul connectivity that links BT and CP exchange nodes. Those vital connectivity links between BT exchanges and

a CP's network as shown by the red dash line in the diagram below. This reflects how the market functions and the inclusion of these links within the market (and with access to the appropriate remedies) to support these vital bridges of connectivity between networks would offer a number of benefits to aid competition and the end user experience:

- CPs could bring traffic onto their network sooner, be less reliant on Openreach and be incentivised to build network out as far as possible. The current proposal encourages use of a less resilient daisy chain architecture, routing traffic through a number of BT-only exchanges until the traffic reaches a point where they have network presence or where they procure an Openreach product from a different market
- CPs could introduce a far higher degree of resilience sooner in their network design.
- CPs would have control of their traffic sooner and this would increase their ability to innovate and develop new products close to the edge of the network
- CPs could break away from key elements of BT's network topology, freeing up their network development and design options by no longer having to match the potentially inefficient routing of Openreach's legacy network.



4.5 The connectivity between two BT exchanges and connectivity from an exchange to the CP network are in fact substitute and complementary services to one another, and therefore naturally fall within the same economic market.

4.6 To address this issue in the current exchange backhaul market definition, Ofcom could evaluate the demand and supply for backhaul connectivity:

I. There is demand for multiple connectivity routes out of each exchange via physically separate duct routeing to allow traffic to be routed in a fully resilient manner between BT exchanges **and** BT exchanges and a CP's network;

II. When evaluating supply of exchange backhaul, Ofcom needs to analyse the actual physical routes each potential rival supplier takes into the BT exchange. This analysis will identify whether Openreach services can be avoided at an exchange or not.

Resilient Network Design: COVID19

4.7 The Covid 19 pandemic has highlighted in stark terms the need to deliver resilient and flexible communications networks. Vodafone has only been able to meet the substantially higher levels of demand placed upon its network during the pandemic due to its network design choices. In particular, its exchange backhaul network and core/trunk network architecture. With a focus upon exchange backhaul, Vodafone has designed the connectivity between the access services purchased from Openreach and its own core network with care to ensure diverse and resilient routing. Vodafone has, for some time, seen the importance of implementing a high degree of network quality in the exchange backhaul, due in part by our decision to aggregate and converge traffic streams from our Enterprise, Home broadband and mobile customers.

4.8 We have moved away from managed service backhaul bought from BT Enterprise & Wholesale to self-supply/self-management. The only way to secure a resilient exchange backhaul network for these services from the BT parent exchange is to ensure secondary resilient paths from each parent exchange.

The BCM 2019

4.9 Inter-Exchange Backhaul for BT-only sites resulted as a modification to the remedy in the last review. Ofcom's understanding of the market and the information available has expanded since 2019. In particular there is far greater awareness today of the need for resilient route network topologies.

4.10 The 2018 BCMR consultation document stated:

"7.7 BT exchanges act as network nodes which are used to aggregate traffic and can act as interconnection points between networks. ……. A large number of BT's exchanges are located in areas where few or no other telecoms providers have network. A significant proportion of SKY's and TT's backhaul circuits connection directly from one BT exchange to another.

7.11 We consider inter-exchange connectivity services to be trunk segments.

7.12 Connection between BT exchanges are part of a wider set of trunk connections. This wider set includes trunk connections to and from the network nodes of other telecoms providers (which are presumed competitive because they are part of the telecoms providers' core network, a network that can rival BT's.)"

4.11 The 2019 statement said:

"6.20. Against this backdrop [the 2014 EC Recommendation], in the 2019 BCMR we looked at each type of trunk connection and concluded that all circuits in the trunk segment should be presumed to be competitive with the exception of circuits between BT exchanges. In particular, we considered that

a) It is appropriate to presume that all trunk connections to telecoms provider network nodes ….. are competitive.

7.35 We consider the presumption of competitiveness is appropriate for telecoms provider's network nodes for three main reasons. First, we expect most connections between two non BT network nodes (eg two Virgin Media network nodes) to be self provides. Second telecoms providers can choose where they locate their own network nodes and therefore we would expect the availability of backhaul from these locations would be a major consideration in such decisions. Third, these sites tend to be fewer in number and be more valuable than individual access sites. As such, we would expect there to be more competition to provide connectivity to them."

4.12 We address some of these conclusions which we believe to be wrong.

A large number of BT's exchanges are located in areas where few or no other telecoms providers have network.

By definition, BT-only exchanges do not have rival networks directly connected to them. However, this does not mean there is not useful rival infrastructure within the vicinity of these exchanges which can be used in order to construct a resilient backhaul network design.

In the case of Vodafone we have looked at the network site data that is provided to Ofcom as part of the BCM S135 data collection exercise. From this data, we can identify that ✂ of our network sites are within the BT-only exchange geography.

In BT+1 exchange geographies we have ✂ of our own network sites. In BT+2 or more we have ✂.

A significant proportion of SKY's and TT's backhaul circuits connection directly from one BT exchange to another.

Ofcom presents data as to how Sky and TT run their network operators. The exchange backhaul function is about getting traffic from a BT exchange back to the CP network. Neither Sky nor TT have substantial fibre networks hence they are not identified as Principal Core Operators (PCOs). Ofcom sets out in footnote 324

"As explained, to be classified a PCO, a telecoms provider needs to own its own fibre network, have a substantial footprint and the capacity to offer wholesale IEC. "

4.13 PCOs are CenturyLink (previously Level 3/Global Crossing/Racal), CityFibre (who acquired much of KCOM's national infrastructure), Colt, Eircom, SSE (who bought NEOs), Virgin Media, Vodafone (who acquired CW, who in turn had acquired the assets of Energis, and Thus, who in turn had the assets of Yourcomms) and Zayo.

4.14 When considering how operators build their exchange backhaul topology it will be relevant to consider the differences between CPs that have substantial fibre footprints and those that do not. Ofcom appears to have unduly focussed upon the methods / requirements of two CPs which do not represent CPs that do have nationwide networks that can be utilised.

In the 2019 BCMR we looked at each type of trunk connection and concluded that all circuits in the trunk segment should be presumed to be competitive with the exception of circuits between BT exchanges.

4.15 In BCM 2019 Ofcom did not undertake any detailed analysis into the function of connections between a BT exchange and BT network sites. Ofcom should analyse the data concerning purchases from an Openreach exchange to CP network sites and question why it is the case that Openreach is sought out to supply BT exchange to CP network connections.

4.16 In the subsequent sections we explain the importance of designing a dual route, resilient exchange backhaul network. We explain that this configuration necessarily connects BT exchanges to one another and also BT exchanges to the CP's own network sites. The connections between BT exchanges and between BT exchanges and a CP network are both substitutes and complementary services to one another, consequently falling within the same economic market.

4.17 It is now clear that Ofcom's previous thinking overstated the prospect of competition in this part of the backhaul market, leading to the false presumption that some competitive supply was available.

Question 6.1 asks: Do you agree with our provisional conclusions on product market definition for wholesale networks? Please set out your reasons and supporting evidence for your response.

4.18 Ofcom's market definition conclusions are summarised in the table below.

Type of route	In the Inter-exchange connectivity services markets	Trunk segments
BT exchange to BT exchange	Yes	Yes
BT exchange to telecoms provider network node	No	Yes

4.19 When we consider the appropriate market definition for the backhaul function, we start by taking a step back to understand the requirements addressed by this market.

4.20 Ofcom's regulation of SMP access services encourages the handover of these services between Openreach and the CP as close to the customer as feasible. Consequently, Openreach has developed GEA handover points at exchanges and EAD LA aggregation services at exchanges. The requirement for localised service handover has resulted in a market for backhaul conveyance forming.

4.21 The purpose of backhaul conveyance is to obtain aggregated traffic from the local access handover, including the range of access service types the CP purchases and for this to be appropriately transported to a CP's network.

A) In some situations CPs have built their network directly to the local handover point,

B) In other situations their network is nearby and a connectivity service from a 3rd party is required,

C) In some situations the network is further away, requiring a 3rd party longer distance connectivity service.

4.22 Appropriate transport to a CPs network means at the soonest feasible opportunity, cost effectively and in a resilient formation.

Looking at Vodafone as an example, we can see that Vodafone has extensive infrastructure routes throughout the UK which includes ✂ Vodafone network sites which connect onward with our core network.

This is illustrated in the charts below showing both the presence of our network sites using Ofcom's 2019 exchange classifications.

✂

4.23 It is not economically feasible, or desirable from a resilience point of view, to connect our network, directly with each and every Openreach point of handover. The objective is to bring traffic away from the Openreach network onto our own network as quickly as possible to ensure optimal use of the facilities we have built and own. The requirement for rapid and resilient handover to existing UK-wide competing infrastructure is entirely missing in the market definition analysis carried out by Ofcom.

4.24 To address our backhaul requirements ✂

4.25 ✂

4.26 ✂

✂

✂

4.27

✂

✂

4.28 Vodafone's backhaul configuration illustrates the nature of the backhaul market and the manner in which the market is supplied by direct connectivity, by rival infrastructure and the necessity of the service to transport backhaul traffic in a resilient manner.

4.29 Ofcom's analysis in the backhaul connectivity market has faltered in a few areas. Apportioning exchanges with no rival connectivity at the exchange into a specific grouping is a relatively straight forward further consideration. However, consideration needs to be given to the demands placed upon the service and the existence of rival network/network sites within the vicinity of a BT-only exchange which rivals want and need to connect to.

4.30 A simple rival count per exchange does not reveal whether there are full service substitutes available to Openreach at each exchange. This level of detail requires precise insight into the routes each rival has built into an exchange. The current analytical approach consequently puts the ability to properly build resilient, cost-effective networks at risk.

4.31 An example of how the incorrect market definition can playout is provided below. ✂

✂

✂

✂

✂

✂

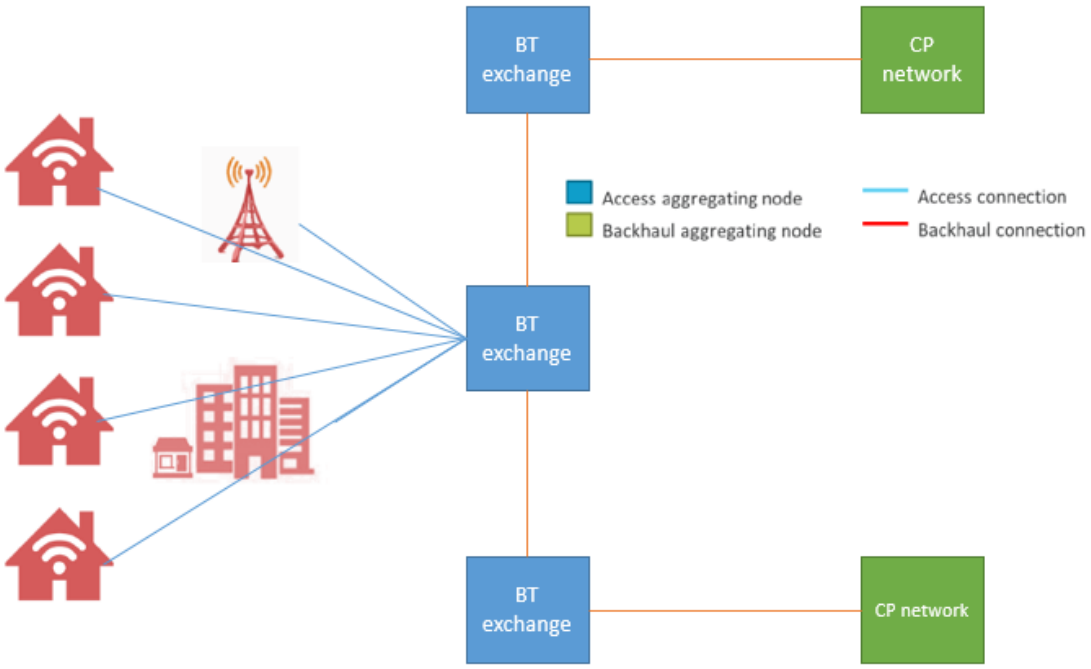
4.32

✂

✂

✂

4.33 To properly define the market, Ofcom would include connections between BT exchanges as well as connections from the BT exchange to a CP site. This includes all the red lines shown in the diagram below.



4.34 When deciding which market grouping to assign each exchange to, Ofcom needs to determine whether rivals can provide not just an alternative supply option but a route diverse supply option. We don't consider this to be a difficult task for Ofcom to undertake. Ofcom already has data showing which exchanges have no rival presence at all. For these geographies, Ofcom simply needs to consider substitution between 'BT exchange to BT exchange connections' with 'BT exchange to CP network connections' and conclude the market covers both service types. For the remainder of the exchanges, Ofcom can conduct a top down analysis and consider the exchanges from which CPs continue to purchase either 'BT exchange to BT exchange connections' or 'BT exchange to CP network connections'. Ofcom can further explore whether this is for network resilience reasons or failure to take up competitive options that exist. Where Openreach connectivity is used for service necessity, then clearly the additional rival connectivity at the exchange does not remove the need for some BT connectivity at the

exchange. This should be reflected by the way that exchange is assigned to a geographic market.

4.35 For this market review it is critical that Ofcom considers the supply and demand of resilient backhaul network topologies in its market analysis. In keeping with the proposals in the access market, Remedies are therefore necessary to enable network operators to connect back to their own networks as well as traverse the BT network.

PCOs

4.36 Ofcom identifies a group of CPs as PCOs. It is our view that the ability to purchase from a variety of suppliers, while maintaining network resilience, needs to be considered.

4.37 Vodafone has arrived at the conclusion that a manageable supply chain for critical exchange backhaul needs to be limited to 3 suppliers including our own self supply. Although we do have relationships with some of the companies listed as PCOs for the supply of some services, we do not use them for the provision of exchange backhaul due to the very limited capability they have to provide such a service.

Century Link (formerly Level 3):

4.38 ✂

✂

✂

Colt:

4.40 ✂

Zayo:

4.41 ✂

CityFibre:

4.42 ✂

4.43 ✂

4.44 ✂

SMP Assessment

Summary

5.1 There is additional data that Ofcom needs to consider when making its SMP assessment. The manner in which retailers purchase services and the reasons behind their behaviours are not adequately captured. Ofcom appear overly reliant upon the data gathered from vertically integrated retailers which only represent a portion of the retail market.

5.2 The January 2020 BCMR appeal identified a richer body of data that is available to Ofcom for consideration. Ofcom needs to use this wider data set to make the SMP assessment robust.

5.3 We also have concerns over the geographic analysis process that has resulted in geographic market definitions that contain substantially heterogeneous areas, contrary to the requirement to capture homogenous areas.

5.4 We agree with Ofcom that BT has SMP in Area 3 (which should be returned to the 2019 BCMR scope of the 'a BT only' geographic area), in Area 2 (which should be returned to the scope of the 2019 BCMR 'BT+1' geographic area). It is our considered position that BT has SMP in both the HNR and CLA as defined by Ofcom in its proposals. We are open to the prospect for a properly defined set of HNR and CLA areas to be considered to have competition, but expect that such areas would be more modestly sized to reflect actual levels of contestability.

The assessment process

5.5 The focus of our 2020 BCMR appeal against Ofcom's BCM decision was the process Ofcom used for assessing SMP, in particular the matter of a presumption of dominance due to high market shares.

5.6 In summary, a SMP assessment must consider the following:

1. Trend in market shares data;
2. Profitability data of the dominant firm;
3. Pricing data of the dominant firm;
4. Pricing data of the competitor firms;
5. Buying behaviour of purchasers of the services;
6. Entrenched links to other markets [backhaul / interconnection costs shared across regulated services.

We discuss these in turn.

Market share data

5.7 We agree with Ofcom that "*market shares provide a useful first indication of competitive conditions in the market as the greater the number of rival networks that have managed to attain a material share of supply, the stronger is the indication that the intensity of competition is greater*." Where market shares are particularly high we agree "*a share in excess of 50% is itself evidence of a dominant position, save in exceptional circumstances*". For such exceptional circumstances to be justified, the stakeholder expectation is that clear evidence would be presented as to why the presumption of a dominant position does not hold.

We need a fuller picture with a more detailed presentation of market behaviour

5.8 Since 2019 Ofcom has used two market share metrics: (1); connections in a given year and (2) total inventory. Both are useful measures, although connections in a given year is more likely to show the current level of competitive conditions.

In presenting the market share data Ofcom groups all the rivals' market shares together, rather than presenting individual rival data (anonymised). This is problematic. Rivals do not operate as a group. It is necessary to show whether rivals as individual entities, as they act individually, have the scale to represent a competitive constraint.

As wholesale regulation is in place to enable retail competition, it is necessary to understand how wholesale connections are used for retail competition and in particular whether this varies between wholesale networks.

We need to better analyse trends

5.9 Ofcom is in a fortunate position of having managed many Business Connectivity Market reviews. As the markets have naturally evolved over time, Ofcom will have a long history of market data which it can reference to understand how market shares have been adjusted as markets have matured.

5.10 Ofcom should, at least, trend the 2016 Business Connective Market review market share data against the 2019 BCMR and WTMR21 datasets. The 2016 data can be made comparable by a) removing EFM from the data set and b) a re-adjustment of the London geographic boundaries within the 2016 dataset. These are likely to be simple data sorting tasks. Ofcom could then

provide market trend data across four periods (as Ofcom plans to collect data for 2018 and 2019 for the WFTMR), tracking the evolution of the market and the health - or otherwise - of competition within said time periods.

For example looking at London:

2007	2011	BCM 2013	BCM 2016	BCM 2019
Based on entire inventory				Based on latest year of connections
WECLA BT SMP 47%[2]	WECLA BT SMP 45-50%[21]	WECLA (thereafter CLA[22] and LP) Low bandwidth Ethernet BT SMP 45 – 55%[23] High bandwidth Ethernet BT no SMP	CLA single bandwidth market 10/100/1G>1G plus EFM calculated that Openreach has 45% share[24]. [25]	CLA single bandwidth market 10/100/1G>1G Openreach has 61 – 70% share

Control of infrastructure not easily replicated by other network operators

[21] Page 515 Figure 7.10 https://www.ofcom.org.uk/__data/assets/pdf_file/0026/57860/sections6-7.pdf
[22] Although the CLA definition has evolved over successive market reviews. Ofcom holds in its data vaults the underlying data sets from the prior market reviews and could cleanse / adjust past data to make it possible to analyse the trend in market shares.

[23] Page 514 https://www.ofcom.org.uk/__data/assets/pdf_file/0026/57860/sections6-7.pdf
[24] Para 4.531 https://www.ofcom.org.uk/__data/assets/pdf_file/0015/72303/bcmr-final-statement-volume-one.pdf
[2525] Expect removal of EFM would increase BT share.

5.16 At the "heart" of Ofcom's SMP assessment is the presence of rival infrastructure and potential competition based on network expansions, facilitated by DPA. Ofcom considers the coverage of rival infrastructure as the most important fact affecting the strength of competition in an area.. The greater the number of rival networks present, the greater the competitive constraint on BT.

5.17 Ofcom's view is an over simplification of a far more complex market dynamic. Ofcom is naive in its belief that the mere presence of a rival tips the competitive scales. There are numerous hurdles before the presence of a rival within an area can act as a competitive constraint.

5.18 There are significant differences between a rival's reuse of network facilities that were built long ago under very difference economic conditions, compared to the economic case for network extension in the present day. The difference in economic conditions over time is evidenced in the data that Ofcom presents. Where a rival network has sunk duct / fibre assets, then of course they will be reused and the rival will have a cost advantage. Ofcom has shown that rivals in such situations can be successful in competing. The problem is that these situations are limited to the historic infrastructure footprint. Ofcom's evidence clearly shows that the economic conditions for new network extension is extremely limited. For example rivals, were only able to extend their networks for 2% of their demand in the CLA, 9% in HNR, 5% in Area 2 and 2% in Area 3.

5.19 Even when rival networks are present, there are additional factors which prevent retailers from using them:

1. Purchasers limit the number of suppliers they use with the aim of being cost efficient throughout their processes for procurement and supplier engagement, ordering and repair management.
2. Where CPs have established Points of Handover at a BT exchange for broadband, better network utilisation will be achieved by aggregating a variety of services, for example broadband and leased lines, at a point of handover sharing the subsequent backhaul connection that has been put in place. At a minimum, supply conditions for Business Connectivity services at the 1000 or so GEA handover points are skewed to favour purchasing from Openreach.
3. Whether the purchaser has a local or long distance point of interconnection for a circuit from a given wholesaler has an influence. If the handover is long distance, then it is

unlikely to be competitively priced with Openreach EAD. Ofcom has collected data through S135 process for this market review which should better assist its understanding of the pricing structures of rival networks and the consequence on network competition. CPs have fewer interconnections with other CPs, while being more deeply interconnected with the Openreach network.

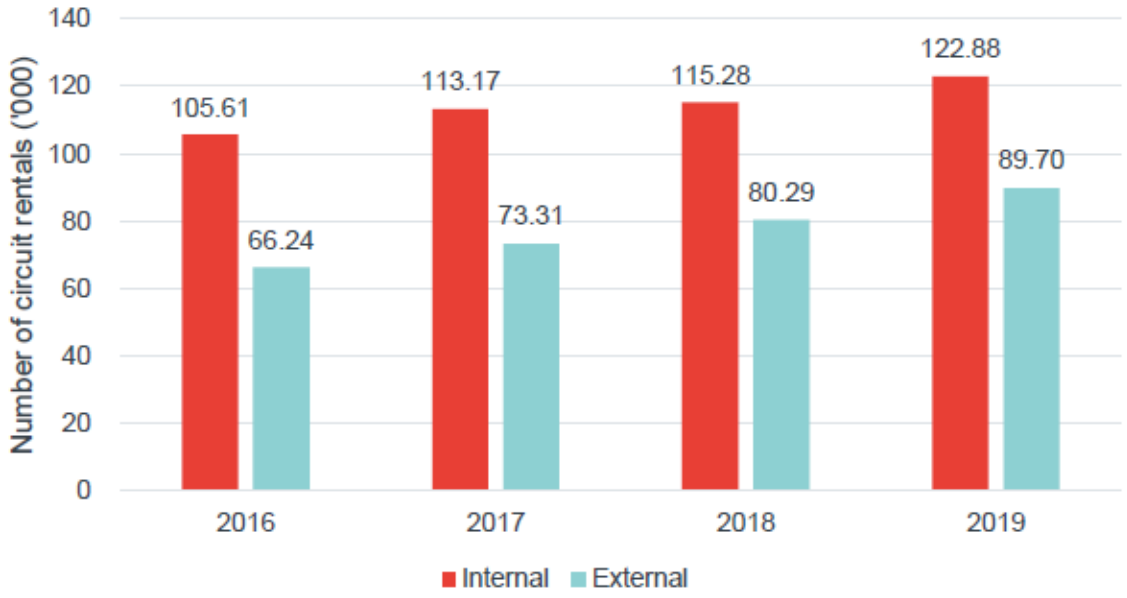
5.20 In the follow section, we look at the detail of the barriers that rival networks have at being an effective competitive constraint.

We need to utilise the BT RFS data sets

5.21 Ofcom can also utilise the BT Regulatory Financial Reporting output to understand industry (and consumer) reliance upon Openreach services and how this has evolved over time. By considering the trends in Openreach sales with reference to the retail market, we can better observe the relevance of Openreach's wholesale market share.

5.22 From the table below we can see that Openreach BCM sales volumes between 2016 and 2019 grew by 20%. We can also establish that Openreach sales to internal lines of business have dropped from 61.5% in 2016 to 58% of all of its sales in 2019. Conversely we can see that the CP market has become more reliant on Openreach, as CP purchases from Openreach over the period have exceed the market growth of 20% and actually resulted in a 26% increase in CP demand for Openreach services.

Figure 6 BCMR circuit rental volumes ('000) 2016-2019



Source: Frontier Economics calculations; BT RFS 2017-2019

Note: Products considered include: EAD 1Gbps Rentals, EAD LA 1Gbps Rentals, EAD 10Mbps Rentals, EAD 100Mbps Rentals, EAD LA 10Mbps Rentals, EAD LA 100Mbps Rentals, EBD 1Gbps Rentals, WES 10Mbps Rentals, WES 100Mbps Rentals, WES 1Gbps Rentals and BES 1Gbps Rentals.

5.23 This trend of increased reliance upon Openreach by retailers should be properly explored in the retail market analysis and consequently be factored into Ofcom's understanding of the wholesale market.

Profitability

5.24 The profitability of services is a useful measure of market competitiveness and Ofcom has considered service profitability in prior market reviews. We illustrate this below.

Figure 7.11: BT profitability on sales of wholesale low bandwidth AISBO services

Product	Year	Reported ROCE	Adjusted ROCE	Turnover (£m)	Reported profit (£m)	Adjusted profit (£m)	Mean Capital Employed (£m)
Wholesale low bandwidth AI services	2010/11	4.5%	12.4%	554	58	161	1,301
	2009/10	25.4%	14.5%	489	284	162	1,120
	2008/09	37.3%	33.8%	494	325	295	873
	2007/08*	31.1%	28.4%	439	266	245	862
	2006/07*	26.9%	31.3%	344	170	197	630

* Figures for 2006/07 and 2007/08 relate to all bandwidths of AI services, whereas data for subsequent years will exclude sales of services above 1Gbit/s.

Source: https://www.ofcom.org.uk/__data/assets/pdf_file/0026/57860/sections6-7.pdf BCM 2013

Table A17.1 BT's reported ROCEs in wholesale leased lines markets in the financial years 2010/11 to 2014/2015

Market	2010/11	2011/12	2011/12 restated	2012/13	2012/13 restated	2013/14	2013/14 restated	2014/15
Low bandwidth TISBO (<=8Mbit/s) - *National*	14%	19%	24%	19%	21%	25%	28%	30%
AISBO – *National*	5%	14%	16%	31%	-	-	-	-
AISBO - *UK outside WECLA*	-	-	-	-	30%	21%	25%	22%
AISBO - *WECLA*	-	-	-	-	70%	48%	50%	48%
MISBO - *UK outside WECLA*	-	-	-	-	11%	32%	45%	15%

Source: RFS published by BT in 2012, 2013, 2014, and 2015 covering the financial years 2010/11 and 2011/12 (RFS 2012), restated accounts for 2011/12 and 2012/13 (RFS 2013), restated accounts for 2012/13 and 2013/14 (RFS 2014), restated accounts for 2013/14 and 2014/15 (revised RFS 2015).

Source: https://www.ofcom.org.uk/__data/assets/pdf_file/0022/55462/final-annexes-14-25.pdf[26]

[26] A17.15 sets out the WECLA data is a reasonable substitute for CLA and LP specific data

5.25 The 2019 BCMR did not contain a profitability analysis. A profitability analysis is a consideration when assessing whether competition is working effectively. Ofcom will be able to use the RFS to understand the profitability of reported services. Ofcom can request that BT provide additional data on the profitability of areas outside of those reported on (i.e. the CLA). A simple comparison will give insight into the differences between the two, and permit useful inferences on the ways in which regulation and competition are working between areas. In the 2020 BCMR appeal, Openreach provided a witness statement suggesting that CLA profitability was well in excess of the reported profitability of the market in general. A market assessment that finds Openreach to have market shares in the region of 60 -70% in any area should also consider profitability and excess profitability.

Assessing wholesale competition barriers

5.26 The most important factor that affects a CP's ability to compete in the wholesale market is whether or not they are already connected to a building with fibre. This requires an understanding of network connectivity that was undertaken historically as well as network build occuring today.

5.27 A number of CPs entered the market in the 1990s and early 2000s focusing on providing business connectivity services, and laying their own fibre assets. Cable & Wireless, Energies, THUS, Your Communications, Torch, MCI-Worldcom, Global Crossing, COLT and Fibrenet all started to compete against BT for enterprise customers. Their networks were focused on major UK cities where enterprise demand was the most concentrated. With the exception of COLT, all these businesses have been subject to some form of takeover, asset sale or financial restructuring. These have been prompted, in most cases, by an inability to sustain their original business models after taking account of the very large sunk costs incurred in laying down fibre.

5.28 Vodafone, Verizon, and Century Link (formally Global Crossing) all have historic networks intended to serve business connectivity customers in the UK's major cities, but remain heavily dependent on Openreach given that they are unable to connect customers at scale without utilising Openreach assets.

5.29 COLT's relative success can largely be explained by its modest network footprint, which is concentrated in an area with a large number of high value clients within the City of London and The Docklands. COLT have similar small footprints in financial districts of other European

and Asian cities serving mostly international customers with specific demands (i.e. major financial institutions and law firms). COLT is effectively unique in owning such a network end-to-end, but this is a relatively small niche. COLT is also successful at attracting resilience demand (the need for these institutions to have diverse routes to their sites in place) using two carriers with completely separate networks. Virgin Media were a later entrant to the market, scaling up their market participation after financial restructuring which saw the original cable bondholders and investors lose out. In the context of business connectivity markets, Virgin Media have focused on seeking to connect enterprise customers who are in proximity to their traditional residential cable footprint.

5.30 Openreach have over 90% of UK businesses connected to their network. In this market, customers are very reluctant to pay to have another network connected to their premises if they already have an Openreach network connection. There are exceptions to this, for example if a customer requires service resilience due to the criticality of a particular site or sites to their business (e.g. a data centre).

5.31 There is also a regulatory reason for Openreach's huge enterprise installed site footprint. Regulation in this market, up until now, has guided CPs to rely on Openreach's regulated wholesale products rather than extending their own networks. The regulation was introduced once it become clear that the economics of the network build model explained above in 5.22 was unsustainable. Alternative networks and retailers have intertwined their networks with Openreach by bring their equipment into the BT exchange for the collection of a range of local access services – EAD LA and NGA/GEA. instead of focussing on self-provision or the management of backhaul and their core networks.

5.32 Openreach has been able to establish a regime that averages and shares network extension costs across the massive user base of Openreach services. The "excess construction charge" scheme enables Openreach to extend its network to enterprise sites using a 'group fund'. Where Openreach does not have a network connection in place, the ECC fixed fee charge means that a CP buying wholesale services from Openreach does not pay the full cost of requiring BT to extend its network. The ECC fund works by assigning a proportion of all Openreach connection charges into a fund, that is then used to extend Openreach's network where it is required (up to a limit of £2,800). The CP requesting the extension only needs to pay for any works in the situation where the total costs exceed £2,800 (and then only to the

extent the cost is in excess of £2,800). The fund is contributed to by every single new connection onto the Openreach network, even though only 30% of connections require network extensions. The smoothing impact of the ECC fund means it is very difficult for another CP to compete with Openreach where any network extension is needed. The lower cost for CPs to use Openreach to extend its network means that Openreach continues to be present in far more locations than anyone else, reaching a critical mass that, in turn, leads to lower connection costs.

5.33 In cases where our network is not connected to the building, we have the option (and always examine the prospect of) extending our network. This choice is, in most cases, prohibitively expensive. It is not industry practice or commercially viable to speculatively connect to buildings ahead of customer orders. It would run a high risk of the connection not being utilised, due to the low levels of customer switching that occur in the retail market. Vodafone has provided evidence to Ofcom showing the level of fibre connected buildings, including the numbers in service. This illustrates why CPs typically seek to recover costs over the initial customer contract term, and why build to sites is not undertaken speculatively.

5.34 In 2017, less than ✂ of our new customers' connections were made by extending our network. As part of the 2019 BCMR consultation process. we provided Ofcom with a list of the costs we would incur in performing a network extension. We estimated that the minimum cost of any network extension would be ✂. This compares to the alternative option of purchasing a wholesale circuit from another supplier (usually Openreach) over three years (the average customer life) for the sum of £6,000. The table below, taken from our 2019 BCMR consultation response. shows a list of the costs involved in network extension. It includes Ofcom's consultation cost estimates and our cost estimates.

✂

✂

5.35 Performing network extensions to an enterprise customer is not simple, quick or without complications. Sometimes local authorities mandate that work is required to be carried out at night, obtaining permission for access from landowners (known as "wayleaves") can take months or even years to be granted. When work commences, the activities prove more difficult than originally anticipated - especially when roads are dug up. This unpredictability and delay often impacts customers significantly and deters them from connectivity solutions

that require network extensions. As we have shown above, the cost of network extension is more than the cost of procuring a wholesale circuit from Openreach. We also estimate, using 2017 data, that performing network extensions for customers can take six months on average. This compares to Openreach who, in 90% of cases, can provide a leased line with no additional network extension digging resulting in lead times of ✂ days.

5.36 In assessing whether rival infrastructure can represent a competitive constraint, Ofcom needs to consider the market evidence on the circumstances where network extension are carried out today, basing its assessment on these real life situations.

CLA and HNR

5.37 Extensive leased line overbuild by competing CPs was not a successful strategy and, ultimately, each of these businesses struggled with this business model and had to write down the value of their assets as customer take up failed to meet expectations. This historic sunk investment underpins all Vodafone on-net connectivity today. The economics and logistics of any new connections that requires any material network extensions are extremely challenging, even in a dense enterprise rich area like the CLA and HNR areas. Given the particular characteristics of population density, even though Vodafone has its network present in the CLA and HNR areas, very little extension work to reach or build closer to enterprise customer sites in this area has been done in recent years.

5.38 COLT is BT's largest competitor in the CLA, yet it remains significantly behind Openreach in terms of its network size. ✂ Most of this investment occurred after telecoms liberalisation in the late 1990s/early 2000s, although some additional network extension has been completed since. Given COLT's niche focus, they typically would not pursue business to provide connectivity on a UK-wide basis (to branch networks for example).

5.39 Other suppliers like Verizon (incorporating the legacy networks of WorldCom, MCI, Sprint and MFS) and Century Link (Level 3, Global Crossing, Fibrenet and Racal) also have legacy network assets in the CLA, although they are likely to have fewer connected buildings than Vodafone and suffer from the same economic barriers to adding new customers to their existing infrastructure (i.e., they continue to be reliant on Openreach). These CPs have a limited carrier-to-carrier wholesale business, but are constrained by the high cost of extending their networks in the CLA. There is a further, smaller tier of CPs for which there is little evidence of any material investment in CLA networks in recent years, save for an SSE project to utilise the London sewer network to provide some new breakout points.

5.40 As we have explained earlier, there are significant costs involved in performing network extensions. In the CLA and in HNR areas, although we have our network present and it is a geographically focused area which could help make network extensions more viable, it is still difficult to extend the network, because:

- The CLA and HNR areas are densely populated and therefore most network extension activity requires road closure, traffic management and complex organisation with local authorities. We budget a cost of ✂ for road closure activities alone. These also cause delay.
- The local authorities in the CLA usually request that network extension activities occur at night due to the likely disruption it would cause during the day. This raises costs due to the extra cost of out of hours working. While night working is requested in other dense urban locations in the UK, it is rare for almost all work to be carried out at night.

5.41 Network extension labour costs are higher in the CLA compared to the rest of the country and they generally have a minimum charge associated with them. The following chart indicates the minimum labour costs which Vodafone would budget.

✂

✂

5.42 Building entry permissions in the form of wayleaves are also very difficult to obtain in the CLA. The density of buildings, amount of general activity and demand for space, permissions and access all add complications and delays. These not only add significant delays to the network extension activities, but cost, on average, an additional ✂ for each network extension.

5.43 We estimate that the minimum network extension cost in the UK is likely to be ✂. This minimum network extension figure also applies to the CLA, although there are factors as discussed above that do push the actual network extension cost in the CLA higher. The average cost of a network extension in the CLA, based on our recent data and excluding the costs of planning consent (i.e. wayleaves), is approximately ✂.

5.44 Furthermore, any network extension in the CLA requires significantly more time before we could deliver the business connectivity service to the customer (compared to a situation where we use an existing BT connection). Using our evidence, on average, it has taken us approximately six months to connect a customer in the CLA where an extension of our network has been required. In 2017, ✂ of the customer demand was satisfied by performing

network extension activities and these on average took ✂ months to complete. This delay is significant when you consider that Openreach is connected to 90% of sites.

Conclusions about the effectiveness of competition in the HNR and CLA

5.45 The cost, complexities and delays associated with extending our own network in the HNR and CLA areas, compared with using an existing connection usually supplied by Openreach, means that Vodafone does not extend its network except in very rare cases. There are a handful of cases each year where network extensions are carried out but these are usually for customer-specific reasons, such as the customer requiring network circuit resilience. Our experience is that other CPs are likely to be in a similar position, which perpetuates the industry reliance on Openreach's network which is connected to over 90% of the enterprise customer sites in the CLA.

5.46 In the June 2019 Statement, Ofcom made Physical Infrastructure Access (PIA) available for use in this market. There is currently insufficient industry experience on using DPA at scale. Its biggest impact is likely to be felt in the residential fibre sector, where Openreach copper continues to dominate and it offers CPs a way to reduce the cost of expanding their FTTP network. In the enterprise sector, where there is a considerable amount of fibre in situ, DPA's impact is uncertain. The industry is currently working through a number of issues to try and make the product more workable, but a number of problems remain.

5.47 We expect the medium- and long-term impacts of DPA to be limited. It is difficult to predict a future landscape for the DPA product as it is a very new product so its use by network operators is extremely limited. Our experience suggests that some of the practical cost and timing issues associated with DPA will limit the scope of its use. As well as using DPA to extend networks to serve business customers, Ofcom's statement on the use of DPA discusses a range of uses such as 'network infill'. Ofcom's explanation is that operators, such as Vodafone, will speculatively fill in coverage holes by using DPA even where we do not have end-retail customers connected. We do not speculatively extend our network and do not believe that this has been industry practise since the late 1990s / early 2000. The introduction of DPA does not change our approach or network strategy in this regard. Practical and cost-related issues will limit the use of DPA in this market. In order to use DPA, network operators have to 'join' their network with Openreach's in order to make a complete fibre link from the customer site to their core network. This entails an operator preforming a network extension and joining their duct network to Openreach's. This means that many of the issues, costs, delays, and planning that occur as part of network extensions would also arise with DPA. As explained

earlier, the minimum cost of a network extension is ✂. Using DPA in some cases may actually be more expensive than simply extending our own network. For example, it may be that by breaking into BT's network, going through the ordering process, incurring all the DPA ordering process issues, and using BT's duct route, that we are actually incurring more costs and taking a longer route to the customer than we would have done if we had extended our own network. To use DPA, we will generally need to obtain wayleaves from landowners. This is because, despite the fact that Openreach is supposed to provide its services to all downstream providers on an equivalent basis, its wayleaves are often personal to BT (i.e. they allow BT to deploy and use only its own fibre in its ducts). However, if another operator uses DPA and wishes to deploy fibre in BT's duct, it then has to seek separate permission from the relevant landlord/landowner. This will still mean that orders will be delayed, and customers need to be prepared to wait on average ✂ months for our service to be connected. We know many customers are not happy to wait this long. Ofcom does not have a solution for this problem, as far as we are aware. To use DPA (even in, the most simple of cases), we still need to perform additional network activities compared to Openreach. For example, we will never be able to connect a customer as economically and quickly as Openreach who already has over 90% of businesses connected to their network today.

5.48 To understand and summarise the extent of rival network competition, it is necessary to identify additional data points beyond those set out in Table 8.3 in Ofcom's SMP evidence:

	CLA	HNR	Area 2	Area 3
BT 2017 service share	60-70%	60 – 70%	70-80%	90-100%
BT internal vs external sale ratio	Share of sales to internal decrease in proportion to shares sold externally over time. Retail competition increasingly relying on Openreach inputs. See Frontier table above capturing a number of years RFS data.			
Average number of network rivals	4.3	2.4	0.8	0.1
Rival network service share / how	Rival 1 Rival 2			

constraining is each rival?	Rival 3 Rival 4 Rival 5			
Frequency of rival network extension	2%	9%	5%	2%
BT connection charge ECC	Zero before first £2800	Zero before first £2800	Zero before first £2800	Zero before first £2800
Rival connection charge ECC	Rival 1 Rival 2 Rival 3 Rival 4 Rival 5			
BT average new connection timescales	30 days	30 days	30 days	30 days
Rival network new connection timescales	Rival 1 Rival 2 Rival 3 Rival 4 Rival 5			

Pricing data and pricing facts

5.49 We agree with Ofcom that it is necessary to consider the pricing offers that are available in the markets under assessment. Ofcom should be looking to identify the range of prices that

are on offer, from both Openreach and other network rivals. Ofcom has requested this data under S135 for the WFTMR and we look forward to its analysis.

5.50 The product pricing information that Ofcom has referenced[27], alongside BT's internal pricing papers, fails to make the case that prices in the CLA - or indeed the HNR - are set at competitive levels. During the 2019 BCMR, BT stated that Openreach ✂. Openreach periodically applies special offer, either targeted at certain geographies or across all geographies for connection charges. In contrast to Ofcom's conclusion, the inference of these facts is that Openreach's overall pricing strategy is unaffected by the small levels of rival network competition.

5.51 Ofcom also needs to consider the impact of Openreach's overall pricing strategy on the ability of rival networks to compete against EAD-LA. Only Openreach has local access circuits due to the extensive reach of its access network and thus the consequential ability for a significant number of customer circuits to be aggregated at local exchanges. The average length of an Openreach LA circuits is 1.9km outside the CLA[28] and substantially less within the CLA. Local Exchange connectivity is only viable when a certain volume of circuits at a given location can be achieved or in supplement where a CP needs to have a colocation presence at that exchange for GEA handover.

5.52 ✂

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Buying behaviour of Retailers

5.53 It is also necessary for Ofcom to take into consideration a number of retailer behaviours. Purchasers limit the number of suppliers they use with the aim of being cost efficient throughout their processes for procurement and supplier engagement, ordering and repair management.

5.54 Where CPs have established Points of Handover at a BT exchange for broadband, better network utilisation will be achieved by aggregating a variety of services. For example, broadband and leased lines aggregated at a point of handover sharing the subsequent backhaul connection that has been put in place. At a minimum, supply conditions for Business

[27] Pricing to the charge control and special offers
[28] Para 2.14 https://www.ofcom.org.uk/__data/assets/pdf_file/0021/103647/statement-non-domestic-rates-dark-fibre.pdf

Connectivity services at the 1000 or so GEA handover points are skewed in favour of purchasing from Openreach.

5.55 Whether the purchaser has a local or long distance point of interconnection for a circuit from a given wholesaler has an influence. If the handover is long distance, then it is unlikely to be competitively priced with Openreach EAD. Ofcom has collected data through S135 process for this market review which should better assist its understanding of the pricing structures of rival networks and the consequence on network competition. CPs have fewer interconnections with other CPs, while being more deeply interconnected with the Openreach network.

5.56 We consider that it is ineffective to conduct an assessment into the ability of rival networks to extend their network, while not considering the position of retailers' connectivity with Openreach.

Proposed SMP findings

Area 3/BT-only

5.57 We have raised concerns with the geographic market analysis for this area. Under either geographic market approach, we agree that BT has SMP in Area 3/BT-only areas.

Area 2/ BT+1

5.58 We have raised concerns with the geographic market analysis for this area. Under either geographic market approach, we agree that BT has SMP in Area 2/BT+1 areas. BT has very high market shares in these areas.

HNR

5.59 We have raised concerns with the geographic market analysis for this area. Under the proposed geographic market approach, we agree that BT has SMP in HNR areas. As Ofcom sets out, BT has a high market share consistent with a presumption of dominance. However, Ofcom states that the SMP finding is finely balanced, which is an assessment that we disagree with.

a) BT is said to offer lower prices for EAD 1G in HNR areas. It is not clear how time-bound special offers for 1G EAD pricing proves higher levels of market competition, particularly when the mainstream market bandwidth is 100M. The pricing may be simply an Openreach strategy to tempt customers into switching to a higher cost bandwidth, which in the longer term is profit maximising.

b) In order to identify the potential for current network competitors to exert competitive pressure, Ofcom should consider their relative market share. Specifically, Ofcom should consider whether they are growing their market share to levels that represent a market threat to BT. Ofcom should consider the retail market demand which they are able to support on net, thus putting pressure on the wholesale prices from other suppliers. Evidence to this effect has not been put forward.

c) The possibility that DPA may increase competition is seemingly cancelled out by the uncertainty as to where exactly DPA services would be deployed and the competitive impact that such use would have.

5.60 We conclude the BT has high levels of SMP in the HNR area. In the event that Ofcom reconsiders the geographic market definition, we would need to assess the new data findings for a smaller HNR.

CLA

5.61 We have raised concerns with the geographic market analysis for this area. Under the geographic market approach, we disagree that BT does not have SMP in the CLA. As Ofcom sets out, BT has a high market share consistent with a presumption of dominance.

a) While there are a greater number of rival networks in the CLA, Ofcom has not demonstrated that the rivals constrain BT's market position:

- BT is able to pursue a simple national wholesale pricing without interruption from rivals in the CLA. In the interests of having a simple national pricing structure, BT has adopted Ofcom's charge controls nationally.
- There is evidence from the BCM appeal that circuit profitability in the CLA is substantially higher than the rest of the UK, showing that competition has been ineffective in driving prices down.
- BT is able to increase the connection charge for circuits by £593 to include a contribution to the UK wide ECC fund, despite CLA customers being pre-connected in excess of 90% of situations.

- BT is said to offer lower prices for EAD 1G in the CLA. It is not clear how the relevance of lower 1G EAD pricing equates to there being higher levels of market competition, particularly when the mainstream market bandwidth is 100M. The pricing may be simply to tempt customers into switching to a higher cost bandwidth, which in the longer term is profit maximising.
- Ofcom has not explored the cost efficiencies of Openreach supplying more than 1 circuit to the same premise. Ofcom sets out that some buildings/postcodes have 12 or more circuits installed/provisioned to them. These buildings are more likely to require higher capacity circuits and have economies of scale in their provision. These economies of scale are not reflected in the pricing offered to the market.
- Ofcom does not compare Openreach's pricing to that of rivals in the situations where they are actually able to compete with Openreach. Ofcom is consequently unable to undertake an assessment as to whether the prices offered are reflective of competitive prices.

Remedies DPA, Leased Lines Access and IEC

Summary

6.1 Ofcom has made a compelling case for dark fibre as an appropriate leased lines access market remedy. However, the decision to limit the benefits of this remedy to a very small proportion of UK sites (Area 3) undermines the economics of its viability as a useable wholesale product, due to the significant on-boarding and fixed costs associated with its initial use. Ofcom should instead consider a nationally available product with pricing alterations consistent with its policy objectives.

6.2 Equivalence of Inputs (EOI) should apply to all regulated Openreach products in markets where they have been found to have SMP. The early justification for exemptions on EOI related to legacy services, no longer stands. These legacy services should now either have fully ceased or transitioned to modern EOI equivalents.

6.3 Quality of service remains an important regulatory remedy necessary to address SMP where it is found and it is important that Ofcom continue to push Openreach for continuous improvements and progression.

Regulated products

Question 5.1 Do you agree with our proposed specific remedies in the LL Access and IEC markets. Please set out your reasons and supporting evidence for your response.

6.4 Ofcom proposes to continue the regulation of active leased lines in response to the leased lines access market in Areas 3, 2 and HNR.

Ofcom proposes to regulate DFA in addition in Area 3.

Area 2:

Leased lines Specific Access Remedies – Area 2	Network access[9]	Trans-parency[10]	Charge control	Quality of Service	EOI / Non-discrimination	No geographic discounts
CI Leased lines[12] (all bandwidths)	✓	✓	Flat prices in real terms	As at 31 March 2021	EOI	✓
Dark fibre	x	x	x	x	x	x

Area 3:

Leased lines Specific Access Remedy - Area 3	Network access[9]	Trans-parency[10]	Charge control	Quality of Service	EOI / Non-discrimination	No geographic discounts
CI Leased lines (all bandwidths)	✓	✓	Flat prices in real terms	As at 31 March 2021	EOI	×
Dark fibre	✓	✓	Cost-based	As per Ethernet	EOI, external sales only	×

HNR:

Leased lines Specific Access Remedy - HNR	Network access[9]	Trans-parency[10]	Charge control	Quality of Service	EOI / Non-discrimination	No geographic discounts
CI Leased lines (all bandwidths)	✓	✓	× Fair and reasonable prices	× KPIs only	EOI	×
Dark fibre	×	×	×	×	×	×

Dark fibre

Question 6.1 Do you agree with our proposed dark fibre access and dark fibre inter exchange remedies? Please set out your reasons and supporting evidence for your response.

6.5 We agree with the proposals to impose a dark fibre remedy in Area 3 and for Inter Exchance Connectivity (IEC). In the section containing our response to IEC, we explain our concerns with the market definition. It is our considered position that dark fibre should be imposed for SMP connections between BT exchanges and from the BT exchange to a CP network.

6.6 Ofcom implemented a DFA remedy for BCM 2019 and now proposes to extend that remedy to a sub set of the leased lines access market. Ofcom proposes that the remaining geographic markets continue to rely upon wholesale active regulation. We consider that DFA should be mandated across the entire leased lines access market:

- Without a national DFA, network innovation is squarely in the hands of Openreach. Other operators will be hampered by the limiting network design of Openreach's active services due to the practical need to continue to consume their active regulated products in large parts of the country.
- The mature BCM with its high fibre penetration means there is little to be gained from further network build. Openreach has very high fibre presence to Enterprise buildings

(and customer floors), with more than 75% of customers able to achieve a quick fibre service activation with Openreach.

- High Openreach fibre penetration has significantly increased barriers to switching. Customers are typically already connected with modern fibre services, potentially with futureproof bandwidth (100Mbit/s with a path to 1Gbit/s upgrades). The incentive to switch supplier will be quashed by cost concerns - why would a customer pay thousands extra to connect additional fibre, when they have already incurred expense to allow Openreach fibre to serve their site?
- Dark fibre is technically and economically an enabler for 5G and other services that require low latency at the edge of the network. Mobile backhaul continues to be constrained and there is now increasing urgency for large backhaul capacity for 5G sites. This is best facilitated by upgrading existing fibre connections. Unlike multi-tenanted enterprise buildings, fibre at cell sites cannot be reused to serve other customers at the site or in the building.
- Dark fibre is a proportionate, practical solution that resolves all of the issues highlighted above. Dark fibre pricing should be flexed in different parts of the country to align with Ofcom's policy objectives. The current set of proposed remedies risk perpetuating the issues that prevent the market functioning effectively. For example, a reliance on duct and pole introduces higher barriers to competing in the business connectivity market and provides BT's downstream business the opportunity to gain further market share beyond the 60% it controls today, harming retail competition further.

Dark Fibre has been and still is the right remedy in this market

6.7 A broader, more effective dark fibre remedy is clearly justified as a UK-wide regulatory remedy for the business connectivity market for the period 2021 – 2026.

Ofcom clearly shares many of our views. Ofcom sets out that DFA 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,*
- *Uses would be able to eliminate inefficient active equipment duplication*

These benefits will in turn allow telecoms providers to better compete on price, service quality and product offering in downstream markets"

6.8 Ofcom now proposes to extend DFA into the leased lines access market, but to restrict its application to Area 3.

New product development needs scale of uptake

Since 2016, the demand for Dark Fibre Access (DFA) in the leased lines access market has increased. Wholesale suppliers are increasingly offering DFA services. However, given the limited obligation placed upon Openreach to provide DFA and taking into account the limited geographic footprint of alternative DFA providers, it is impossible to obtain the necessary volumes needed to make the most of DFA's potential. A UK-wide DFA remedy would provide the necessary scale for DFA to be fully utilised and developed to the benefit of consumers.

Inefficient active equipment duplication

All fibre circuits that are connected from operators to end customers require an active electronics box at either end of the fibre - this cannot be avoided. The boxes can be made small, efficient and as environmentally friendly as possible, but one box on either end is unavoidable at present. The additional environmental impact of the power and cooling requirements that are needed on active connections like EAD due to the necessary equipment duplication is entirely avoidable with DFA. The increasing focus on sustainability and our impact on the planet has hastened the need to move to less resource intensive products. We estimate that we spend £300k per annum on power and cooling at Openreach exchanges which could be entirely eliminated with the transition to dark fibre. If we consider how this wasted use of power is magnified across the wholesale buying community and then again consider the wasted power at the customer end, it is clear there are substantial power savings that could be achieved. This is in addition to the significant amount of plastic and IT waste that would be eliminated, when two boxes on each circuit are removed from each connection.

Control of services being delivered

6.9 The benefits of greater control over services and its impact on the cost base have been highlighted during the Covid-19 pandemic. Our offers to help our customers have been constrained by the manner in which Openreach wishes to operate its underlying services and the rule structure that Openreach has devised. Customers who would have benefited from service pauses and payment pauses under a CP controlled circuit set up are prevented from doing so due to the control architecture Openreach require on active circuits.

Dark Fibre Access is the national solution

6.10 Vodafone believes that making dark fibre available nationally would give network operators the product they desire, drastically reduce the carbon footprint of networks and enable operators to deliver enhanced services to end customers.

6.11 We understand Ofcom's focus on network investment and their strong desire not to do anything that may discourage this. It is important to bear in mind that the transfer of the substantial in-situ active base of connections will take a considerable number of years. It is consequently important to get this process in plan and started.

6.12 Instead of limited DFA, Ofcom should instead seek to meet its regulatory objectives by flexing the pricing of DFA. The remedies proposed above show that Ofcom is fully capable of flexing the remedies across geographies as this is the proposal for the active services.

6.13 We discuss this further in the pricing section.

When setting market remedies, Ofcom has to assess the suitability of the prospective remedies for achieving Ofcom's strategic goals:

- Active products (such as EAD) do absolutely nothing for Ofcom's strategic goals, in fact they work against them because they eliminate network innovation possibilities and are highly unsuitable for such things as 5G backhaul.
- Dark fibre products meet Ofcom's objectives for network innovation. Given how high fibre penetration is today, there are unlikely to be any negative impacts on alternative network investment resulting from the availability of Dark Fibre in this market,

6.14 Dark Fibre Access and Duct and Pole Access are complementary remedies. With Duct and Pole, unfibred Business Connectivity customers stand a greater chance of securing a non-Openreach connection. However, those customers with existing Openreach fibre – and for whom another fibre connection is not economically viable – will be able to benefit from innovation and better priced competition by using Dark Fibre Access.

6.15 BT's market power is best addressed by competitors in the market having stable and clear long term pricing. It is our view that this is best facilitated by the introduction of a UK-wide, dark fibre remedy:

- This will enable competitors to offer contracts to customers, clearly knowing their cost base over the entire three-year length of the customer contract.
- Competitors will be able to develop new services that they can offer on both their own fibre and BT fibre, as services are no longer constrained by BT's active equipment. Today, it is not worthwhile innovating for services that are limited to our own fibre connected sites.
- Competitors will still to be able to extend their own networks to meet specific customer demand and, in situations where this remains economic, provide service to sites not already connected by fibre.

EOI

6.16 The EoI obligation is put in place as a proportionate response to BT's market power. The requirement ensures that where SMP product are relied upon by other market participants, the SMP product is equally and fairly provided to ensure that competition can be conducted on its merits in downstream market functions rather than through a leverage of BT's wholesale market SMP position.

6.17 In paragraph 3.43 Ofcom discusses Openreach's request for clarification pertaining to its ability to tender and commercial access arrangements. Ofcom sets out that "services must be made available to all telecoms providers on the same basis. So, if Openreach offers a particular commercial arrangement, this must be made available on the same terms to all telecoms providers". We agree with this, but consider that the offer should not just be made available but also be practically accessible i.e. that there are not limitations to market participants who could practically take up the offer due to their market sector or market scale.

6.18 Whilst we agree that there will be costs to transitioning BT's own use of DPA to be EOI, we consider that these costs will be justified given Ofcom's expectation that in the long term DPA will be the primary SMP product supporting downstream market competition.

6.19 Exemptions to EOI were set in place when EOI was first introduced, primarily to not place an undue burden on converting legacy services across to EOI. As time progresses, the expectation is that the number of exempted services would decline to zero, especially since EOI has now been a market feature for over a decade. It simply must be the case that a service deemed 'legacy' a decade ago will either have ceased to exist or have undergone technical changes which would have meant its transition to EOI.

6.20 Accommodation services are a critical component of using both GEA and obtaining leased lines local access services as Ofcom identifies. Ofcom considers that BT's requirements for accommodation services are likely to be different to those of other telecoms providers because of the scale of its equipment deployment and as such downstream divisions are likely to use different accommodation products, even if these are obtained from Openreach. As a priority it is necessary to obtain transparency as to the differences between the accommodation services and costs experienced by CPs and BT downstream. The processes for space ultilsation require a dramatic overhaul and while they are likely to remain CP-specific, there are no incentives upon Openreach to improve the processes to better utilise space and power. These costs are simply charged on. It is necessary for these functions to be fully EOI in terms of allocation of space and power and also in terms of cost allocation.

6.21 Dark fibre must be EOI. Dark fibre is, like DPA is for WLA, the future of the Business Connectivity market. Ofcom should mandate that Openreach provide DFA UK-wide for the

related Business Connectivity product markets. DFA is offered by non-SMP wholesalers. It no longer makes any sense for Openreach not to offer dark fibre. Ofcom should instead consider the product pricing as the mechanism to address its competition concerns.

6.22 The proposed WDM exception should be explored in detail. The materiality of this exemption and the manner in which volumes have changed over time need to be transparently discussed. As a general position, we are opposed to long-running exemptions offered on the basis of legacy operational practises. The option to add exemptions where BT uses propriety interfaces for downstream business functions appears to be an open door for manipulation of this exemption. Far more consultation detail is required for a full and transparent review of this present situation.

Geographic discounts

6.23 Ofcom is minded to prohibit geographic discounts on leased lines rental charges in areas 2. We are keen to avoid an outcome where Openreach, through the use of targeted discounts, is able to distort the market, particularly if this could result in BT being able to favour its own retail divisions. Not all discounting is bad as it can aid wider competition, but when so much of the wholesale and retail market resides with one integrated provider, Ofcom should take a cautious approach.

6.24 The likely outcome of the regulatory price approach by market is that Area 2 will have the highest market pricing compared to other geographic areas. Area 3 will have cost-based dark fibre while CLA and HNR do not have price regulation. Provided the geographic boundaries for the CLA and HNR are truly reflective of homogenous competitive conditions, one would expect that competition would see prices fall. Area 2 falls in the middle of these two regimes.

QoS

6.25 Quality of service regulation is justified and proportionate. It is necessary for Ofcom to put in place a minimum standard that must be attained, along with KPI reporting to provide transparency of how that standard is being attained.

Customer confidence in switching suppliers relies upon robust and successful provisioning processes. When provisioning quality levels fall, customers for whom the business case might otherwise prove positive are likely to reduce their propensity to switch supplier, impacting overall levels of competition in the market.

Question 7.1 Do you agree with our proposed approach to QoS? Please set our your reasons and supporting evidence.

6.26 Poor levels of quality of service, in particular for provisioning, have direct consequences for competition in the market. Service quality can drop very quickly, but returning quality back to acceptable levels is a process that can span years. We illustrate this in the table below:

Time period	Issues
Spring 2012:	High-level decisions taken within BT to reorganise Openreach centralising planning and reducing headcount to deliver 'efficiency' savings[29]
Summer 2012:	Openreach planning & headcount changes introduced and service crisis ensues
Autumn 2012:	Industry is slow to react, assured by Openreach that problems are temporary and will be resolved quickly
Spring 2013:	Openreach continues to struggle with lack of resource, growing order-book and the additional strain on NGA delivery. Get well plans are introduced, but without additional resourcing or unwinding of previous changes, they fail.
Summer 2013:	Growing industry disquiet at length of service crisis. CPs facing the wrath of their customers are escalating issues to Openreach, but still no senior management ownership of the issue.
Autumn 2013	CPs escalate concerns to Ofcom, who are being informed simultaneously by Openreach that things are under control. Recovery plans continue to fail and Ofcom (informed by direct industry feedback) begin asking Openreach management tough questions. This results in Openreach senior team acknowledging, for the first time, that there is a wider problem that needs to be resolved.
Winter 2013/14:	Openreach trumpets EMP upgrade as the solution to the problem, asking CPs to get behind it. CP concern that EMP is too far away and too big a leap – request to focus on fixing current processes.
Spring 2014:	With OTA oversight there is continuing tension between Openreach and Industry around EMP vs. fixing current processes. Eventually Openreach commit to do both, with DoJ the solution proposed by Openreach, after request to re-order SLG payments is proposed by industry (but then rejected by Openreach). Recovery plans continue to fail. New Openreach

[29] Slide 9: http://www.btplc.com/Sharesandperformance/Quarterlyresults/PDFdownloads/q413_slides_update_part2.pdf £39M of cost saving where made with huge knock impact for service for years to come

	CEO takes criticism on the chin and acknowledges failures and promises new resources (unwinding previous cuts).
Summer 2014:	Tensions high, with DoJ Openreach team unpicking what is required and where things appear to be going wrong. Very apparent that Openreach have underestimated the scale of the task. Innovations like Clarity are delayed and EMP work stack takes a back seat for the first time.
Autumn 2014:	Further recovery plans have failed, DoJ trial delayed. Scale of Deemed Consent/date management issues significant. It becomes apparent that despite the good intention of the Openreach team, the lack of clearly understood internal processes, lack of joined up delivery within various Openreach teams and the limitations resulting from the use of third party contractors limits the ability of Openreach to make positive change.
Winter 2014/5:	DoJ trial delayed further as full extent of the task becomes apparent. Trial scope is modified to make it more achievable to deliver. EMP is no longer on the agenda as DoJ and date management discussions dominate. Clarity is available, but only in pull format.
Spring 2015:	Only 53% of our orders with Openreach are delivered on time. Scaled back trial finally commences in April 2015. Deemed Consent usage rules still not fully agreed. New Openreach resource is finally coming through, but service crisis continues. April 2015 – Collaborative Service Improvement Eight Point Plan – further recovery initiative to focus on main points of inefficiency and improve delivery.
April 2016	The Ofcom new minimum service standard regime starts, reflecting that performance to CDD has been at 70% of orders.
April 2017	80% orders to CDDs minimum standard is met.
April 2018	85% orders to CDD minimum standard is met.

Source: Vodafone

6.27 It is our considered position that this is a clear rationale and justification for the application of regulated QoS where this SMP. Ofcom proposes the following measures:

WLA market : MPF and GEA-FTTC products	QoS Level (adjusted for *force majeure)*
Repair completion within SLA timescales	88% (85%)
Repair completion within SLA + days	97%
% of installations to be completed by Committed Date	95% (94%)
Quality standards in relation to the FAD for installations requiring an engineer visit - working days within which first date offered for installation appointments	10
Quality standards in relation to the FAD for installations requiring an engineer visit - Frequency with which regulated installation appointment date must be offered	90% (89%)
LL and IEC markets: all EAD (including EAD LA), EBD, Cablelink and Dark Fibre products	**QoS Level (adjusted for *force majeure)***
MTTP (Mean time to provide across orders)	No more than 38 working days
Upper percentile limit for provisions	No more than 3% delivered in more than 133 working days
Certainty: % of orders completed on or before initial Contractual Delivery Date (iCDD)	86%
Certainty Cross-Link: Maximum mean period for the iCDD	No more than 53 working days
% of faults repaired within the SLA	94%

6.28 Vodafone supports the proposed measures for active services, with the exception of iCDD which is proposed to be set at 86%. We advocate that this be increased to 88%.

ICCD is important to provide delivery certainty for our customers and also important in turning orders into billable services. Pressure needs to be in place to ensure the focus on this aspect of service delivery. If we look at data from the early part of 2019/20, we can see that performance is patchy.

✂

6.29 Whereas evidence from this calendar year's operation illustrates that 88% can be readily achieved when there is adequate focus.

✂

6.30 In order to ensure consistent focus throughout the year, iCCD should be set at 88% which we can see is fully achievable when required to ensure overall annual compliance.

If we look at the historic position of iCDD regulation, we see that Ofcom put in place a progression to 90% in 2018 in the 2016 regulation. This was reduced to 88% via the temporary regulation and maintained via the BCM 2019.

BCMR MSL	2016	2017	2018	Temporary	2019	2020
iCDD %	80%	85%	90%	88%	85%	88%

6.31 It is consequently extremely odd that Ofcom would now propose this is reduced to 86%.

Despite finding BT to have SMP in HNR areas, Ofcom has not imposed QoS obligations. We have concern that not applying the minimum floors will result in a lack of protection from BT's SMP. Ofcom has found BT's SMP in HNR areas sufficiently concerning to result in the application of a range of other regulatory remedies:

- The requirement to provide network access on reasonable request is justified for HNR areas to prevent margin squeezing or otherwise anticompetitive behavior in setting prices. Ofcom recognises the risk that a vertically integrated operator may have incentives to put pressure on competitors by modifying pricing to their disadvantage.
- The requirement to provide new forms of network access is justified, as without regulation, vertically integrated operators have the ability to favour their own downstream business over third parties including the handling of requests for new forms of access.
- The requirement to not unduly discriminate, including EOI, is justified to prevent BT from engaging in discriminatory practices that could adversely affect competition and ultimately cause detriment to citizens and consumers.
- The requirements of transparency are justified to assist the monitoring of potential anti-competitive behavior and to give visibility to the terms and conditions on which other providers can purchase wholesale services.
- The requirements to notify charges, terms and conditions are justified on the basis that providers have sufficient time to plan for service changes and have advance knowledge of changes.

- The requirement to notify CPs about changes to technical information is justified so that CPs have sufficient time to respond to technical changes that may affect them and so that CP can make effective use of products provided.
- The requirements for financial reporting, cost accounting and accounting separation are justified. They give access to necessary information needed for the monitoring of pricing remedies and their effectiveness, as well as to provide public information aids to ensure compliance with SMP obligations.

6.32 We consider that Quality of Service levels have important implications for customer confidence and that these should apply wherever there is SMP.

DPA

Summary

7.1 Duct and pole access continues to be in its infancy of product development. If Ofcom is serious that DPA will become the key regulatory remedy over time, then Ofcom needs to step in to address the outstanding issues within its productisation and step up regulation enforcing a full EOI regime.

Use criteria

7.2 ✂

7.3 The challenges to the use of DPA for BCM replacement services lie with the costs of building duct between our network and the BT duct network in order to achieve the end-to-end connectivity to the customer's site. In the section on SMP assessment, we set out the cost levels needed for this physical network extension activity (the costs are of the same nature as a full short distance network extension), the costs of obtaining permits and the associated timescales.

7.4 ✂

7.5 ✂

7.6 ✂

7.7 ✂

7.8 ✂

7.9 We continue to remain of the view that DPA and DFA are complementary products in a mature fibre market. The use cases for each are likely to vary with the particulars of the connectivity required and the variation in costs of connecting single and multiple sites when using DPA.