
Promoting competition and investment in fibre networks: Wholesale Fixed Telecoms Market Review 2021-26

Volume 3: Non-pricing remedies

Non-confidential version – redacted for publication [X]

CONSULTATION:

Publication date: 8 January 2020 [Updated 28 February 2020]

Closing date for responses: 1 April 2020

Contents

Section

1. Introduction and approach to remedies	2
2. Copper retirement	16
3. General remedies: physical infrastructure, WLA, LL Access and IEC markets	29
4. Specific remedies: physical infrastructure market	61
5. Specific remedies: WLA, LL Access and IEC markets	74
6. Specific remedies: dark fibre	95
7. Quality of Service	120
8. Legal tests	139

Annexes relevant to this Volume

A7. Network build and the use of PIA	
A11. Potential adverse effects of the physical infrastructure access remedy	
A12. Guidance on PIA network adjustments and no undue discrimination compliance	
A13. Benefits and risks of dark fibre	
A14. Quality of Service KPI reporting tables	
A15. Regulation of geographic discounts and other commercial terms	
A22. Estimating the 40/10 fibre premium	

1. Introduction and approach to remedies

1.1 This section sets out our approach to our proposed remedies. These proposed remedies aim to deal with the SMP findings set out in Volume 2 which, in summary, identify BT to have SMP (outside the Hull Area) in:

- the physical infrastructure market, nationally;
- the wholesale local access market in each of Area 2 and Area 3;
- leased line access markets in each of Area 2 and Area 3;
- leased line access market in High Network Reach areas; and
- the inter-exchange connectivity market, at BT+ 1 and BT only Exchanges.

1.2 In this section, before setting out the detail of the proposed remedies covered in Sections 2-7 and associated charge controls set out in Volume 4, we summarise:

- the competition concerns that we are seeking to address in this consultation;
- our strategy and objectives for promoting network-based competition, as context;
- how the varying competitive conditions and prospects for competition and investment in full fibre networks in specific geographic areas which we have identified in our provisional market analysis have led us to vary our remedies; and
- the impact of copper retirement on our proposed remedies.

Competition concerns

1.3 BT's SMP in the physical infrastructure, WLA, leased line access and inter-exchange connectivity markets, gives rise to a number of competition concerns (see Sections 5 and 8 of Volume 2). Absent regulation, BT's SMP would give it the ability and incentive to engage in various forms of conduct that could distort competition and/or harm consumers. A summary of these concerns, from either exclusionary or exploitative behaviour, are as follows. Our provisional market analysis has found that Openreach¹ has the ability and incentive:

- to refuse to supply access and thus restrict competition in the provision of products and services in the relevant downstream markets;
- to set excessive wholesale charges or, in combination with downstream prices, engage in a price squeeze behaviour (also referred to as "margin squeeze");
- to favour its downstream retail businesses to the detriment of its competitors in the relevant retail markets, by both price and non-price discrimination;
- not to invest in new networks or do so more slowly than would occur in a competitive market;
- to target price reductions or adopt other commercial terms that distort competition in the rollout of new networks; and

¹ As explained in Volume 2, we propose to find BT to have SMP in the physical infrastructure, WLA, leased line access and inter-exchange connectivity markets. To address this SMP we propose to impose remedies on BT. We refer to Openreach in this volume reflecting that BT's Openreach division, run by Openreach Limited, is responsible for providing services over the copper and fibre connections between BT's exchanges to homes and businesses.

- to not maintain an adequate level of service quality in the provision and repair of wholesale services or to discriminate in the quality of provision.

Objectives

- 1.4 The Strategic Review of Digital Communications (“DCR”) set out how we proposed to exercise our functions to regulate communications markets in accordance with our duties.² This set out our intention to regulate to encourage large-scale deployment of new fibre networks both to homes and businesses, support for extension of cable based broadband, and support for 5G networks. We said that, in places where consumer demand leads to new investments, we considered that it was desirable to see one or more new providers enter the market, competing head-to-head with Openreach and with other existing network operators such as Virgin Media.
- 1.5 Since the DCR we have pursued this approach to regulation to deliver a revised regulatory framework designed to support competition.
- In March 2018, in our Wholesale Local Access Market Review, we initiated a new pricing structure for access services which included encouragement of rival investment in access networks as a key factor in setting access prices;
 - In June 2019, as a result of the Physical Infrastructure Market Review, we required BT to provide unrestricted access to its duct and pole infrastructure until 2021.
 - Also, in our June 2019 Business Connectivity Market Review, we maintained pricing stability until 2021 on existing business leased line services by holding prices flat in nominal terms. We also introduced dark fibre for backhaul connections where Openreach is the only operator present in an exchange.
 - In December 2018 and March 2019, we set out our initial ideas for geographic market segmentation and revised approach to remedies in our early consultations for this review.
- 1.6 We propose to continue to implement this strategy in this review by seeking to give all UK consumers access to as wide as possible choice of fibre networks. As explained in Volume 1, we consider that adopting this strategic approach meets our statutory duties. In particular, we propose to further the interests of citizens and consumers by setting our regulation to create appropriate conditions to incentivise both Openreach and other operators to invest in fibre networks, through network competition where viable and appropriate investment incentives where not.
- 1.7 We note that this approach is also consistent with both the Government’s ambition to provide gigabit capable networks and making them widely available across the UK^{3,4} (which we describe in more detail later in this section) and the 2018 EECC Directive. This directive

² Ofcom, February 2016. *Strategic Review of Digital Communications*. [accessed 14 November 2019]

³ DCMS, October 2019. *Statement of Strategic Priorities for telecommunications, the management of radio spectrum, and postal services*. [accessed 17 December 2019]

⁴ DCMS, July 2018. *Future Telecoms Infrastructure Review*. [accessed 14 November 2019]

requires National Regulatory Authorities to pursue certain general objectives including the promotion of connectivity and access to, and take-up of, very high capacity networks.

- 1.8 We consider that there are early signs that our strategy and programme of works is significantly contributing to a more positive environment for fibre investment. Although full fibre is available to only 8% of the UK (c. 2.5m premises) today, this has more than tripled over the last three years.^{5,6} The duct and pole regulation has also resulted in significant interest and activity from existing and prospective competitors to Openreach, with over 40 customers and orders for c.5,000km of duct and c.40,000 poles, and with demand growing strongly over the past 6 months.⁷

Delivery strategy where network competition is viable

- 1.9 Following on from the above, our proposed approach to remedies is to support investment in fibre networks through network competition in areas where this is viable. It is clear from our experience in the UK and observed experience in other countries, that the prospect of competition is the most effective incentive for innovation and investment and the existence of network competition offers benefit to consumers in terms of choice and value for money.
- 1.10 Therefore, in these areas, we propose remedies which encourage communications providers to build networks for themselves and for other providers, rather than rely on access to the Openreach network. This remedial approach has two main aspects:
- a) opening up BT's ducts and poles to reduce the cost of network roll out by competitors; and
 - b) setting price and other regulatory conditions for the existing regulated access services such that network investment by competitors is viable and telecoms providers currently utilising Openreach access services consider that there are benefits in building their own networks or working with alternative network operators.
- 1.11 We recognise that the emergence of competing networks will take time. Accordingly, our proposals will need to protect consumers from excessive pricing or a loss of retail competition in the short term.

Deliver strategy where large scale network competition is not viable

- 1.12 However, we recognise that there are parts of the UK where large scale network competition is unlikely. For these areas, the interest of consumers is best served by encouraging Openreach to invest. Therefore, where network competition is not viable, our proposed approach to remedies is to incentivise investment in very high-speed networks through setting appropriate investment incentives for Openreach. Competition can then be based on

⁵ Ofcom, September 2019. [Connected Nations Update, Summer 2019](#). [accessed 10 December 2019]

⁶ Ofcom, December 2017. [Connected Nations Report, December 2017](#). [accessed 10 December 2019]

⁷ Openreach, 2019. [CP PIA Tower Event presentation](#), 30 September 2019.

requiring Openreach to provide wholesale access to its network and services, including access to dark fibre.

Transition from copper to fibre networks

- 1.13 If Openreach builds a new fibre network, it will want to transition its customer base onto this network so that it can retire its old copper network. We propose that our regulation should support this transition.
- 1.14 This requires us to work with Openreach to put in place measures to both encourage take-up of fibre services where they are available and to provide a path for shifting regulation from copper to fibre. We discuss this in more detail in the next section while noting below how this interacts with our proposed regulation.

Approach to remedies

- 1.15 In light of the above, we propose to take the following approach to remedies in this review.

Physical infrastructure remedies

- 1.16 We have identified in Volume 2 that BT (outside the Hull area) has SMP in physical infrastructure, nationally. To address this, we propose to continue to require Openreach to provide wholesale access to its duct and pole infrastructure together with a cost-based charge control to allow Openreach to recover its costs whilst preventing excessive pricing.

Wholesale local access and leased line access remedies

- 1.17 In Volume 2, for the wholesale local access and leased line access markets, we have identified geographic markets in which the conditions of competition are different.
- 1.18 Whilst we have identified separate markets for wholesale local access and leased lines access, we consider that it is appropriate at times to consider our approach to remedies across product markets. This is because we have observed an increasing trend towards investment in networks that service both markets and for competition in one market to provide new opportunities for competition in the other.
- 1.19 Accordingly, we propose to consider our approach to access remedies in the following groupings:
- Area 2 – Potential rival network build. This refers to the WLA Area 2 market and the Leased Line Area 2 market, where our market analysis has indicated that there is already some material commercial deployment by rival networks or where this could be economic;
 - Area 3 – No expected rival network build. This refers to the WLA Area 3 market and the Leased Line Area 3 market where there is unlikely to be material commercial deployment by rival networks; and

- High Network Reach areas where there is significantly more leased line network competition, but BT still has SMP.

1.20 Throughout the remainder of the document where it is appropriate to discuss the Area 2 and Area 3 markets collectively, we will use the terms Area 2 – Potential rival network build and Area 3 – No expected rival network build, as defined above.

1.21 Our broad approach to remedies in these different areas is as follows.

Area 2 - Potential rival network build

1.22 In these areas, there is already some competition, and further competitive investment is likely. We expect this competitive tension to also incentivise Openreach to deploy very high capacity network. In order to support this investment, we believe that our regulatory approach should seek to provide a stable and consistent environment.

1.23 Our regulatory approach in these areas also needs to balance the short-term benefits of protecting existing models of competition and consumers and the longer-term benefits of promoting competitive investment. To this end, we propose to require Openreach to continue to provide wholesale access to its WLA and leased line access services.

1.24 In the WLA market we propose to focus our charge controls only on the provision of the FTTC 40/10 product (until such time as it is appropriate to switch regulation to FTTP) with no charge control on higher speed services. This provides scope for Openreach to innovate in the provision of higher speed services whilst at the same time maintaining incentives for investment by potential alternative network operators and allowing Openreach to recover its costs.

1.25 The determination of a charge level commensurate with these aims can never be a precise calculation. While we have undertaken modelling to ensure that our proposals sit within the range necessary to deliver both cost recovery for Openreach and alternative network operators, we consider that the ultimate charge determination should also take account of the benefits of pricing continuity. Accordingly, as we explain in more detail in Volume 4, we are proposing that the price for WLA and leased line access services are held constant in real terms from March 2021, i.e. taken forward in inflation-adjusted terms (CPI-0%).

1.26 Finally, given the strong incentive on Openreach to seek to stifle the emergence of new competitors, we intend to prohibit geographic price discounting in these areas for FTTC, FTTP, and leased line services. Where justified, there would be scope for discretionary exemptions to this rule depending on the specific circumstances of any request. We are also alive to the risk of other loyalty-inducing commercial terms, in terms of their impact on competition. We will monitor commercial terms proposed by Openreach on an ongoing basis and, where necessary, intervene under our SMP conditions (see Annex 15 for discussions on commercial flexibility).

Area 3 - No expected rival network build

- 1.27 In these areas, there is unlikely to be material commercial deployment by rival networks and the use of duct and pole remedy is expected to be limited. With little prospect of network competition our regulatory approach seeks to promote retail competition and prevent Openreach from setting excessive prices.
- 1.28 Our regulatory approach also aims to balance the desire for Openreach to invest and upgrade its network with the need of ensuring that it does not set excessive prices in these areas. To this end we propose to require Openreach to continue to provide wholesale access to its WLA and leased line services. We also propose to require Openreach to provide a dark fibre leased line service.
- 1.29 In the WLA market we propose to have a cost-based charge control. However, to provide Openreach with the right incentives to invest, we propose that the cost base used to set regulated charges includes both the costs of the existing copper network and any necessary costs associated with upgrading the network to fibre. This approach to setting regulated prices is generally referred to as a Regulatory Asset Base (RAB) approach, and our detailed proposals for this are set out in Volume 4. How we set the exact charge controls in practice will depend on the level of certainty we have of Openreach's investment plans.
- 1.30 While we consider that the probability of competitive network entry in this area at scale is very low, there is still the potential for competition for the market in some geographies, potentially also linked to public funded initiatives. For this reason, we would not wish Openreach to undermine new network provision by setting low access prices for FTTC in specific areas and we are therefore, proposing to prohibit geographic price discounting for FTTC in this area.
- 1.31 In the leased line access market, we are proposing that Openreach is required to provide a dark fibre access service. We see this as being an effective remedy to address the impact of BT market power in leased lines in these areas, consistent with our approach of applying remedies as far upstream as possible. We also propose a cost-based charge control for this dark fibre service to allow Openreach to recover its costs whilst preventing excessive pricing.
- 1.32 Although we expect dark fibre access to become the primary leased line remedy over time in this area, we propose to continue to require Openreach to provide active leased line services. This is to provide regulatory consistency and stability to minimise market uncertainty as the take up of dark fibre access develops. To balance the need to protect customers from excessive pricing, to allow Openreach to recover its costs for active services, and to incentivise the take up of dark fibre, we propose that the prices of active leased line services are held constant in real terms from March 2021, i.e. taken forward in inflation-adjusted terms (CPI-0%).

Leased line access in High network reach (HNR) areas

- 1.33 From our provisional market analysis set out in Volume 2, in the case of leased lines, we identified pockets of competition (outside of the CLA) where there are at least two or more

rival leased line networks near to a business site. Although these areas are not yet fully competitive, we find competition to be more developed and with the potential for them to emerge as fully competitive in future review periods, a process we wish to encourage.

- 1.34 Whilst we propose that Openreach continues to have an obligation to supply leased lines in these areas, it is appropriate that this obligation comes with a lighter set of pricing regulation compared to areas where we observe that the conditions of competition are weaker. We, therefore, propose that leased lines services in these areas are charged on a ‘fair and reasonable’ basis to protect retail competition, should there be evidence of price (“margin”) squeezing.

Inter-exchange leased line remedies

- 1.35 In regulating key wholesale inter-exchange leased line services (services which provide connectivity between Openreach exchanges located in different geographic areas), we take account of the differences in competition at Openreach exchanges which we identified in our provisional market analysis in Volume 2. Our approach varies depending on whether Openreach faces one competitor at an exchange or no competitors at all.

BT+1 exchanges

- 1.36 In these exchanges, where limited competition exists, we propose to continue to require Openreach to provide inter-exchange leased lines to other exchanges. This is to provide regulatory consistency and stability to minimise market uncertainty whilst protecting customers from excessive pricing. We therefore propose that prices of active inter-exchange leased line services are held constant in real terms from March 2021, i.e. taken forward in inflation-adjusted terms (CPI-0%).

BT only exchanges

- 1.37 With little immediate prospect of network competition, and no significant infrastructure build of inter-exchange services expected using our upstream duct and pole remedy, we propose to retain a dark fibre remedy from these exchanges. This will apply only where no rival inter-exchange operator is present or nearby. Dark fibre will promote competition, in the provision of backhaul between exchanges where there are no competing networks, and will also help to reduce barriers to infrastructure build in marginal areas of the access markets. We propose a cost-based charge control for dark fibre to allow Openreach to recover its costs whilst preventing excessive pricing.
- 1.38 Although we expect dark fibre inter-exchange to become the primary remedy over time at these exchanges, we also propose to require Openreach to provide active leased line inter-exchange services. We therefore propose that prices of active inter-exchange leased line services are held constant in real terms from March 2021, i.e. taken forward in inflation-adjusted terms (CPI-0%). This is to provide a balance between incentivising the take up of dark fibre whilst protecting customers from excessive pricing and allowing Openreach to recover its costs.

The impact of copper retirement on WLA services

- 1.39 We want our regulation to support a smooth transition from the legacy copper network to the new fibre network while protecting consumers and ensuring that there are not households left behind.
- 1.40 We are proposing a charge control for FTTP 40/10 services at a price uplift from the FTTC 40/10 charge control (see Volume 4) to reflect the additional value that fibre offers (see Annex 22). This control will apply nationally wherever FTTP is the only service available at a premises; in exchanges where Openreach has deployed ultrafast services to 75% or more of premises (in parallel with the copper 40/10 charge); and will be the sole charge control in an exchange area where copper controls have been removed following complete ultrafast deployment to an exchange.⁸
- 1.41 We propose to move regulation from copper to fibre on an exchange area by exchange area basis using a staged approach. When Openreach has deployed ultrafast to 75% of the premises within an exchange area, for those premises where fibre is available, we propose to remove the obligation to meet new requests for network access which uses its copper network. Once complete ultrafast coverage has been reached in any exchange, for those premises where fibre is available, we then expect to remove charge controls on copper services. The details of this approach are set out in more detail in Section 2.

Summary of our remedies by product market

- 1.42 The proposed remedies in each relevant market are summarised in the following tables, covering:
- Physical infrastructure;
 - Wholesale local access and leased line access in Area 2 and Area 3;
 - Leased lines access in high network reach areas; and
 - Inter-exchange connectivity.
- 1.43 In each of these product markets we have imposed a general network access obligation supplemented by transparency and non-discrimination requirements. We also propose a number of specific network access remedies and requirements on Openreach to provide particular forms of network access in each product market. For each of the product markets, the following tables set out the specific network access requirements we are proposing and our approach to transparency, charge controls, quality of service, EOI/non-discrimination, and prohibition of geographic discounts in each case.

⁸ The FTTP charge control will only apply at premises where FTTP is available.

Upstream physical infrastructure remedies

Table 1.1: Physical infrastructure access (PIA) remedies

PIA Specific Access Remedy	Network access ⁹	Trans- parency ¹⁰	Charge control	Quality of Service	EOI / Non-discrimination	No geographic discounts
Physical infrastructure access	✓	✓	Cost based	✗ Voluntary KPIs	Non discrimination	✗

Downstream remedies

WLA and leased line access

Table 1.2: Proposed remedies for WLA and leased line access in Area 2

WLA Specific Access Remedies - Area 2	Network access ⁹	Trans- parency ¹⁰	Charge control	Quality of Service	EOI / Non-discrimination	No geographic discounts
MPF ¹¹ (anchor) Removal of General Access requirement for new copper services	✓	✓	Flat prices in real terms	As at 31 March 2021	EOI	✓
FTTC 40/10 (anchor)	✓	✓	Flat prices in real terms	As at 31 March 2021	EOI	✓
FTTC (all other bandwidths)	✓	✓	✗	As at 31 March 2021	EOI	✓
FTTP or G.fast (all bandwidths)	✓	✓	✗ 40/10 where no copper service is available	✗ KPIs only	EOI	✓
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	✗	✗	✗	✗	✗	✗

⁹ Network access includes a requirement for Openreach to have a Statement of Requirements (SoR) process under which access seekers can request new forms of access.

¹⁰ Transparency includes requirements to publish a reference offer, provide notifications for changes to existing terms and conditions and for new forms of network access, and notify technical information. A separate upcoming consultation will set out proposed requirements for cost accounting and accounting separation.

¹¹ There is also a SLU network access requirement. See Section 4 of Volume 3 for further detail on SLU and any associated regulatory obligations and requirements.

¹² Contemporary Interface (CI) refers to Openreach's Ethernet and WDM products.

Table 1.3: Proposed remedies for WLA and leased line access in Area 3

WLA Specific Access Remedy – Area 3	Network access ⁹	Trans- parency ¹⁰	Charge control	Quality of Service	EOI / Non-discrimination	No geographic discounts
MPF ¹³ (anchor)	✓ Removal of General Access requirement for new copper services	✓	Cost based: If Openreach provides sufficient commitment, indexed as in Area 2; else	As at 31 March 2021	EOI	✓
FTTC 40/10 (anchor)	✓	✓	If no commitment, charge uplift after fibre deployment	As at 31 March 2021	EOI	✓
FTTC (all other bandwidths)	✓	✓		As at 31 March 2021	EOI	✓
FTTP or G.fast (all bandwidths)	✓	✓	✗ 40/10 where no copper service is available	✗ KPIs only	EOI	✗
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	✗

High Network Reach areas

Table 1.4: Proposed remedies for High Network Reach (HNR) Areas

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	✗	✗	✗	✗	✗	✗

¹³ There is also a SLU network access requirement. See Section 4 of Volume 3 for further detail on SLU and any associated regulatory obligations and requirements.

Inter-exchange leased lines (IEC)

Table 1.5: Proposed remedies for IEC in BT only areas

IEC – BT Only Specific Access Remedy	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	✗

Table 1.6: Proposed remedies for IEC in BT+1 areas

IEC – BT + 1 Specific Access Remedy	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	✗	✗	✗	✗	✗	✗

Government’s Strategic Statement of Priorities

1.44 In October 2019, the Government designated its Strategic Statement of Priorities (SSP) for telecommunications, the management of radio spectrum, and postal services. We are required by section 2B(2) of the Act to have regard to the SSP in the relevant priority areas. This review includes proposals which would take forward a number of the areas covered by the SSP:

- world-class digital infrastructure;
- furthering the interests of telecoms consumers; and
- ensuring secure and resilient telecoms infrastructure.

1.45 We share the Government’s strategic objective to ensure that the UK has world class digital infrastructure. We agree that regulation needs to support investment in the next generation of fast, more reliable fibre networks that will benefit consumers across the UK.

1.46 As noted above, our DCR strategy set out how we proposed to exercise our functions to regulate communications markets in accordance with our duties. This set out our intention to regulate to encourage large-scale deployment of new fibre networks both to homes and businesses, support for extension of cable-based broadband, and support for 5G networks. As set out in detail above, since the DCR, we have worked to deliver this revised regulatory framework to support competition and to give all UK consumers access to fibre networks.

- 1.47 We consider this approach complements Government's investment in digital infrastructure, and will work closely with the UK and devolved Government's to ensure that any funding schemes to deliver digital connectivity continue to complement the proposals in this review.

How we have had regard to the SSP

- 1.48 In formulating our proposals in this review, we have had regard to the Government's SSP. There are five areas of the SSP on full fibre connectivity which are particularly relevant:
- Making the cost of deploying full fibre networks as low as possible by addressing barriers to deployment;
 - Supporting market entry and expansion by alternative network operators through effective access to Openreach's ducts and poles, complemented by access to other utility infrastructure, for example, sewers;
 - Stable and long-term regulation that incentivises network investment and ensures fair and effective competition between new and existing network operators;
 - An 'outside in' approach to deployment that means gigabit-capable connectivity across all of the UK is achieved on a similar timescale, and no areas are left behind;
 - A switchover process to enable consumer migration to gigabit-capable services; and
 - A flexible and forward-looking view which supports convergence between fixed and mobile networks.

Making the cost of deploying full fibre networks as low as possible by addressing barriers to deployment, and supporting market entry and expansion by alternative network operators through effective access to Openreach's ducts and poles

- 1.49 The Government's 'barrier busting' programme is addressing the cost of full fibre networks. We are working closely with them to support work to address barriers to deployment that are outside of Ofcom's remit.
- 1.50 The 2019 Physical Infrastructure Market Review (PIMR) removed the geographic and product usage restrictions on physical infrastructure access (PIA) to essentially allow communications providers to use PIA anywhere within Openreach's national duct and pole estate and for the deployment of any type of telecommunications network. This enhanced PIA product has been available since August 2019, after the initial product was launched on 1st April 2019.
- 1.51 In the six months since the enhanced PIA product was launched, CPs have placed orders to use c.5,000 km of ducts and c.40,000 poles and Openreach have processed requests from CPs for more than 1,000 network adjustments. We expect to see order volumes continue to grow strongly as the product beds in and a number of enhancements are introduced over the coming 6 – 9 months to better support scale network rollouts.
- 1.52 This document proposes to maintain the requirement on Openreach to provide PIA which will continue to allow rival companies greater access to Openreach's telegraph poles and underground ducts. This will mean that network providers would be able to lay their own fibre networks using Openreach's infrastructure, regardless of whether they are serving

residential customers, large businesses or mobile operators. Further detail about our proposals to regulate PIA can be found in Section 4.

Stable and long-term regulation that incentivises network investment and ensures fair and effective competition between new and existing network operators

1.53 The relevant provisions in the European Electronic Communications Code would enable us to provide for longer market review periods of five years, which provide greater regulatory certainty for businesses looking to invest. This document sets out our detailed plans for regulation of the fixed telecoms markets from 2021 to 2026, to provide that certainty.

An ‘outside in’ approach to deployment that means gigabit-capable connectivity across all of the UK is achieved on a similar timescale, and no areas are left behind

1.54 Our proposals for geographic pricing regulation, as set out in this document, will complement the schemes which the UK and devolved Governments are working to design to help improve coverage of broadband services to the hardest to reach areas.

1.55 Specifically, in areas where there is unlikely to be material commercial deployment by rival networks to Openreach, we are proposing regulation designed to incentivise investment by Openreach. For leased lines access services in “Area 3 – No expected rival network build”, we are proposing to require access to Openreach’s ‘dark fibre’ at a price that reflects its costs. As detailed above, providers will have unrestricted access to DPA which can cut the upfront cost of building these networks by around half.

A switchover process to enable consumer migration to gigabit-capable services

1.56 In order to support Openreach in retiring its copper network, in broad terms we are proposing to remove regulation on Openreach’s copper products in an exchange area where certain fibre build thresholds are reached, and transfer regulation (including relevant charge controls) from copper to fibre services. These regulatory conditions should allow Openreach to incentivise providers to encourage their customers to switch to fibre.

1.57 Further detail about our proposals can be found in Section 2.

The policy and regulatory framework should be sufficiently flexible and forward-looking to support convergence between fixed and mobile networks

1.58 In the longer term, we expect more convergence in the telecoms sector. Our work is already adapting to support the convergence of fixed and mobile networks, through this unified market review, and our proposals to allow network providers to lay their own fibre networks using Openreach’s infrastructure, regardless of whether they are serving residential customers, large businesses or mobile operators. Our proposals also support the deployment of 5G networks through ensuring that there is provision of backhaul services. Our proposals to require Openreach to offer dark fibre at cost based charges in “Area 3 - No expected rival network build” facilitate this, and in “Area 2 - Potential rival network build” we expect the market to provide these services.

Insufficiency of competition law

- 1.59 Under Article 8(2) of the Access Directive, where we designate an operator as having SMP in a specific market, we are required to impose remedies. However, in considering the imposition of remedies, we take into account the potential application of competition law. To do this we have considered whether competition law, in particular the rules prohibiting the abuse of a dominant position, would be effective in responding to the competition concerns identified above.
- 1.60 First, we have taken account of the fact that the products in the wholesale markets we have identified are inputs into other downstream markets. Appropriate *ex ante* intervention at the upstream level can promote effective competition in downstream markets. It can also facilitate the emergence of effective competition at the upstream level itself. Competition law, insofar as is relevant, prohibits the abuse of a dominant position – it does not seek to promote competition, which is one of the aims of our package of *ex ante* remedies.
- 1.61 Second, the requirement to address the competition problems in each of the markets in which we find SMP means imposing an interconnected and complex package of remedies, including provisions to ensure that they remain effective for the duration of the review period.
- 1.62 Third, we consider it is important to provide sufficient certainty about the rules applying to the dominant provider in the wholesale markets. We consider this certainty is best achieved through *ex ante* regulation. *Ex ante* regulation will also allow for timely intervention by us proactively enforcing the conditions and, if necessary, by parties bringing regulatory disputes to us for swift resolution.
- 1.63 We therefore consider that, in the current and expected circumstances of the relevant markets over the review period, competition law alone would be insufficient to address the competition problems we have identified. We explain in our assessment of our individual remedy proposals where we consider there are particular additional relevant points relating to the sufficiency of competition law.

Consultation question(s)

Question 1.1: Do you agree with our proposed approach to remedies? Please set out your reasons and supporting evidence for your response.

2. Copper retirement

2.1 In this section we set out our approach to regulation in the wholesale local access market in both Areas 2 and 3 (potential rival network build and no expected rival network build areas respectively), where Openreach deploys ultrafast services and will, ultimately, seek to withdraw legacy copper services. In particular, we set out:

- our general approach to supporting the migration from copper to fibre;
- our proposals for changes to regulation during migration; and
- the impact of our proposals on consumers and businesses.

A progressive approach to migration from copper to fibre

2.2 Openreach has announced an exchange-based approach to fibre deployment – that is, it plans to provide ultrafast services across contiguous areas based on its current exchange footprint – and subsequently retire copper services in these areas.¹⁴ Openreach plans to deploy fibre to 4 million premises by March 2021 and provide ultrafast services to further premises using G.fast. Of these, the majority will be part of Openreach’s exchange-based rollout and form the basis of its initial plans to retire copper services.

2.3 Our proposed remedies are broadly similar when Openreach just has a copper network and when, ultimately, Openreach just has a fibre network: an obligation to provide access on fair, reasonable and non-discriminatory terms with an anchor charge control on 40/10 services.¹⁵ This approach to copper retirement is consistent with our overall approach in this review which is to further the interests of citizens and consumers by setting our regulation to create appropriate conditions to incentivise both Openreach and other operators to invest in full fibre networks. Consistent with our duty to secure the availability throughout the United Kingdom of a wide range of electronic communications services, our policy on copper retirement also aims to ensure that, wherever possible, no homes and businesses are left behind.

2.4 We aim to promote fibre investment by shifting the focus of regulation from copper to fibre, to support the migration to fibre services. The faster customers migrate from copper to fibre, the stronger the business case for investment as Openreach can avoid the costs of operating both copper and fibre networks in parallel.

2.5 However, if copper regulation is removed too quickly, it risks leaving some customers exposed to harm: either by the loss of choice or competition, or by the removal of services relied upon by vulnerable customers or critical national infrastructure (CNI).¹⁶

¹⁴ Ultrafast includes services provided using full fibre or G.fast where this can provide a line speed of 300 Mbit/s download.

¹⁵ This is set out in Section 5, Specific remedies: WLA, LL access and IEC markets.

¹⁶ The Government’s definition of CNI is: “Those critical elements of infrastructure (namely assets, facilities, systems, networks or processes and the essential workers that operate and facilitate them), the loss or compromise of which could

- 2.6 Our concern is that Openreach may have the incentive to deploy fibre in a way that deters competitor investment: by either targeting just those parts of an exchange area where competitors are present, or by deploying ultrafast in part of an area just sufficient to deter competitor investment in that area in the short term and then redeploying resources to provide coverage elsewhere. This could cumulatively deter competitor investment across a wider area. If this were to result in less network competition, Openreach would then have less incentive to return and complete ultrafast coverage in an area.
- 2.7 We now set out our proposals for regulation during the migration from copper to fibre, and how these proposals support our policy aims of promoting investment and network competition and to ensure that, wherever possible, no homes and businesses are left behind.¹⁷

Our proposals

Access and charge control obligations

- 2.8 Our proposals shift the focus of regulation from wholesale copper services to wholesale fibre services in both Area 2 (potential rival network build) and Area 3 (no expected rival network build) in the wholesale local access (WLA) market. This envisages that the network access requirement, charge control and other supporting obligations will move from access based on copper to access based on fibre, over a set period.
- 2.9 In March 2019, we proposed a two-year transition period during which copper and fibre regulation would apply in parallel, starting when an exchange had 100% ultrafast coverage. Respondents to our March 2019 consultation highlighted the difficulties that may be faced in reaching the final small number of premises in an area. They also highlighted that a threshold of 100% coverage may unduly delay or reduce the certainty of copper retirement and reduce the incentives for Openreach to invest.
- 2.10 Also in March 2019, Openreach consulted on its proposals to retire its copper network, including proposals for a ‘stop-sell’ once ultrafast coverage reaches 75% in an exchange.¹⁸ Respondents to Openreach’s consultation highlighted the need to have a clear plan for completing coverage, but appeared to subscribe to the principle of a ‘stop sell’ applying before full completion of the exchange.¹⁹ Generally, the principle of ‘stop sell’ appears to be

result in: a) Major detrimental impact on the availability, integrity or delivery of essential services—including those services whose integrity, if compromised, could result in significant loss of life or casualties—taking into account significant economic or social impacts; and/or b) Significant impact on national security, national defence, or the functioning of the state.”

<https://www.cpni.gov.uk/critical-national-infrastructure-0>

¹⁷ Our proposals in this section and proposed network access requirements are set out in further detail in Section 5, Specific remedies: WLA, LL access and IEC markets

¹⁸ Openreach, March 2019. *Openreach Industry Consultation on: An exchange-based approach to upgrading the UK’s digital infrastructure with FTTP*.

¹⁹ Openreach, June 2019. Response to Openreach Industry Consultation on: An exchange-based approach to upgrading the UK’s digital infrastructure with FTTP. Summary of consultation responses on migration to FTTP, page 5. [accessed 12 December 2019]

largely accepted by industry, although we set out below our concerns in relation to vulnerable consumers and how we expect these concerns to be addressed.

- 2.11 Therefore, we propose to keep that two-year transition period, but we now propose to commence the transition when Openreach has reached 75% ultrafast coverage in the exchange.²⁰ At this point Openreach would notify it has reached the 75% threshold and would be allowed to 'stop sell' new copper services: that is, where fibre is available, Openreach would no longer be required to provide copper services for new connections or for changes to bandwidth or provider, and instead could offer only fibre services.²¹
- 2.12 We propose to implement this by providing for amended general and specific network access requirements to apply in relation to any exchange where Openreach has reached 75% ultrafast coverage (see Section 3 on General remedies and Section 5 on Specific remedies). However, for those customers not making any change to their services, the requirement to provide access to copper services would continue to apply, along with the associated remedies set out in Section 3, including quality of service obligations.
- 2.13 During this two-year period a charge control would apply to both copper and fibre services.²² As we set out in Section 5, we propose that the charge control on FTTP 40/10 rental will be set at a premium to the charge control for FTTC 40/10.
- 2.14 When ultrafast coverage in an exchange area is complete – that is, Openreach has made ultrafast services available at all premises or has taken all reasonable steps²³ to make services available - and after a minimum of two years has passed since the introduction of the 'stop sell', we propose to remove the charge control for copper services for premises where fibre is available. As part of this, we would remove the prohibition of geographic discounts proposed in Section 3, to the extent that they apply to copper services.
- 2.15 We propose to implement this by providing for the copper charge control to fall away in relation to any exchange where Openreach has reached complete ultrafast coverage.²⁴ At this point, for premises where fibre is available, the charge control will only apply to fibre services. However, the charge control for copper services will continue to apply for those

²⁰ This is set out in Section 3, General remedies, subsection 'Disapplication of the general network access obligation in relation to copper retirement'.

²¹ At this point Openreach is allowed to implement the stop sell, but not required, i.e. it could decide not to implement it immediately. However, in addition to any contractual arrangements, Openreach would still need to give 90 days notice for changes to prices, terms and conditions. We discuss our transparency measures later in this chapter.

²² During this transition period, a charge control would apply to MPF and FTTC 40/10 (copper) services and to FTTP 40/10 (fibre) services. Openreach would have pricing flexibility on higher bandwidth services in Area 2 and on FTTP higher bandwidth services in Area 3. Details of our charge control proposals are set out in Volume 4.

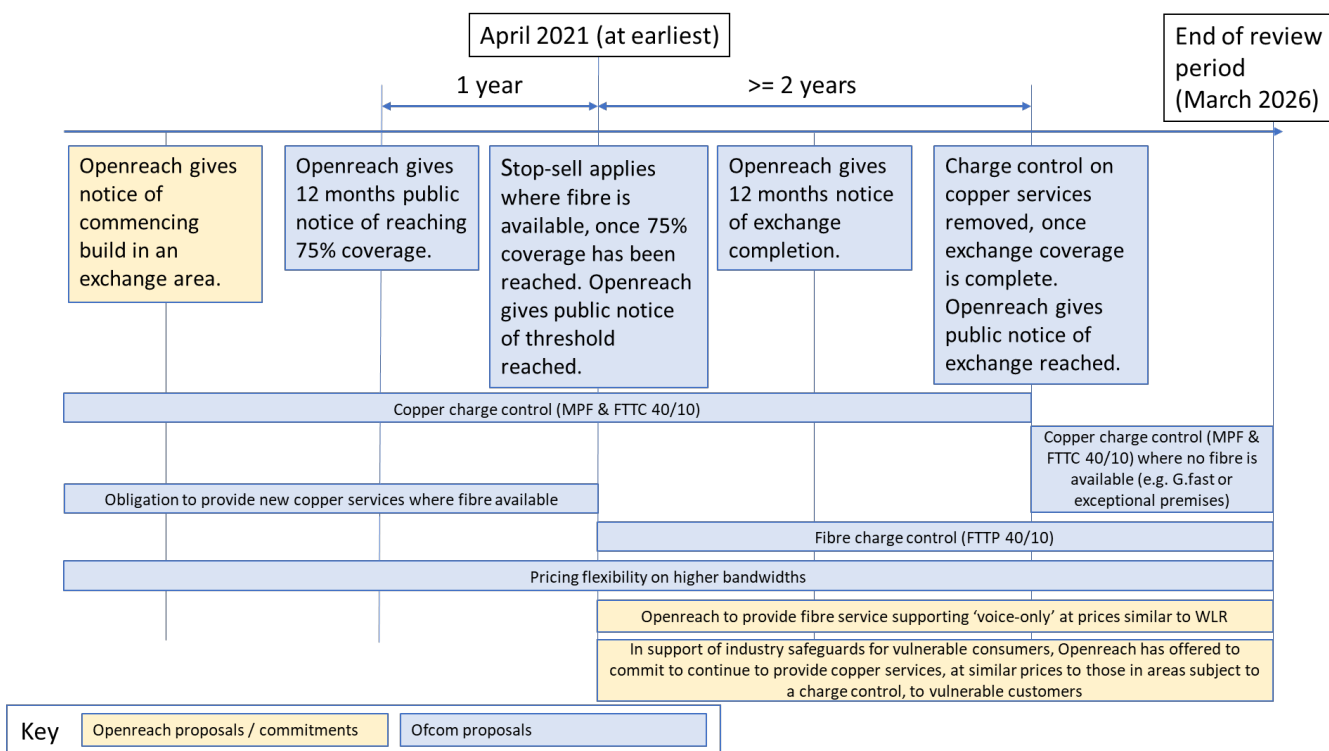
²³ We outline our proposals for what we consider 'all reasonable steps' below.

²⁴ This is set out in Section 3, General remedies, subsection 'Disapplication of the general network access obligation in relation to copper retirement'

premises where fibre services are not available.²⁵ Section 5, on Specific remedies, sets out how this will be implemented in the regulatory conditions.

- 2.16 We anticipate that the removal of the charge control on copper services at the end of the transition period will provide a strong incentive for customers to migrate to fibre services, which in turn strengthens Openreach’s case for investment in fibre.
- 2.17 We believe that our new proposals provide an incentive to invest, as Openreach can deploy fibre with more certainty that migration to fibre can start, and as the period during which Openreach incurs the costs of operating both copper and fibre networks at scale in parallel can be limited.
- 2.18 Figure 2.1 below illustrates how the access and charge control obligations change during the migration from copper to fibre in Area 2 (potential rival network build).²⁶

Figure 2.1: progressive approach to copper retirement (Area 2)²⁷



²⁵ The stop sell in place since the beginning of the transition period, when Openreach has reached 75% ultrafast coverage, will continue to apply to new services. This does not apply to those premises where fibre is not available. The same principles apply in completed exchanges.

²⁶ The principal difference for Area 3 is that Openreach will have pricing flexibility on fibre higher bandwidth services only. In Area 3, where a charge control applies to copper services that charge control also applies to copper higher bandwidth services. Details of our charge control proposals are set out in Volume 4.

²⁷ In addition to the 12 month and completion notifications on Openreach for reaching both 75% coverage and exchange completion that we are proposing here, there is also the concurrent regulation we are proposing in Section 3, General remedies, regarding 90 day notification for changes to Openreach’s prices, terms and conditions for existing services and 28 day notification for prices, terms and conditions relating to new services.

- 2.19 These proposals combine with commitments that Openreach has offered to provide in relation to supporting vulnerable consumers.
- 2.20 In Volume 2, Section 9, we propose to deregulate WLR and ISDN services (ISDN2 and ISDN30) from April 2021. Notwithstanding this, Openreach has made a separate voluntary commitment to continue to provide new WLR and ISDN services until December 2023 and existing services until December 2025, in each case on fair and reasonable terms. For these WLR and ISDN services that Openreach provides voluntarily, we would expect Openreach to follow the same principles as those that apply to the regulated copper services. Therefore, where an exchange has reached 75% ultrafast coverage, we would expect Openreach to stop sell new WLR and ISDN services at those premises where fibre is available.
- 2.21 At this stage we are not proposing to remove the general and specific access obligations that apply to existing copper services (as set out in Sections 3 and 5). Openreach has already said that the earliest it would withdraw legacy copper services would be April 2026.²⁸ We therefore do not anticipate that retaining the general access requirement on existing services would be a constraint to fibre migration in practice. In addition, industry discussions on the migration process and how to deal with more challenging cases have only recently started. We believe it is too early to lift the general access obligation, which provides a backstop protection for communication providers, vulnerable consumers and CNI. As explained above, this does not apply to requests for new copper services, where we propose to enable Openreach to ‘stop sell’ new copper services where fibre is available at that premises.
- 2.22 Finally, we are proposing to remove the obligation to develop new forms of access on copper services, except to enable the migration of current copper services to new fibre and single order services. By new forms of access, we mean new types of services; this is distinct from the stop sell above which applies to new requests for the provision of existing services. Our proposal aims to avoid the potential complexity of Openreach developing new forms of access on legacy services and to facilitate the eventual transition process to new fibre and ultrafast services.
- 2.23 Table 2.2 at the end of this chapter, and Sections 3 and 5, set out in more detail how we propose that our regulatory requirements will change with copper retirement.

Definition of complete coverage

- 2.24 As mentioned above, stakeholders highlighted the difficulties in reaching 100% ultrafast coverage. We have therefore considered further what might constitute full ultrafast coverage for our copper retirement policy.

²⁸ Openreach said there would be no withdrawal of copper services before the national WLR withdrawal in December 2025 (except for trial areas). For GEA-FTTP build announced in April 2019, Openreach envisages copper withdrawal in April 2026. For GEA-FTTP build announced after April 2019, Openreach envisages that the period between the build notice and copper withdrawal would be shorter than seven years, eventually reaching five years, and there would not be any copper services withdrawal before April 2026.

- 2.25 We propose that the pre-requisite for the removal of the charge control, that Openreach has to complete ultrafast coverage in an exchange area, applies only to those premises that exist at the time of the start of the roll-out of the exchange and are still premises when coverage is measured, i.e. not new build after the start of the deployment. Only coverage of those premises that exist at the time of the start of the roll-out would be included our calculations. For those premises built after the start of fibre deployment where Openreach provides network, we expect network providers in most cases to deploy fibre.²⁹
- 2.26 For any premises to be counted as having ultrafast coverage available, an ultrafast service should be available to be ordered for those premises and subject to the normal service level agreements and quality of service standards.³⁰
- 2.27 When calculating whether coverage in an area is complete, we propose to exclude those premises where Openreach has made all reasonable efforts, but has been unable to provide ultrafast services because of long-term restrictions to street or premises access, or other factors beyond Openreach's control (e.g. flooding, or a 'no-dig' order from the Local Authority that prevents any civil works from taking place within a specific area for several years). Where there are landlord access issues, we expect Openreach to have used the Lands Tribunal to seek to impose Code powers rights. We propose to require Openreach to notify us of any such premises which should be excluded from the assessment as to whether coverage in an area is complete.
- 2.28 We acknowledge that there are many possible reasons as to why Openreach may not be able to connect a premises despite all reasonable efforts and that the examples set out above are not exhaustive. We want to ensure that our list of exceptions is sufficiently detailed to provide transparency and certainty to Openreach, communications providers and customers as to the circumstances where a premises may have to be left and ultrafast made available after an exchange is declared ultrafast complete, or by using another technology.
- 2.29 Therefore, following on from this consultation and stakeholder feedback, we plan a smaller, more targeted consultation on how these premises might be exempted, including on how this would be reflected in the SMP conditions. We also expect this further consultation to include our proposals of what information Openreach will be required to provide to Ofcom where such exemptions apply. Our expectation is that premises would only be exempted in very exceptional cases out of Openreach's control.
- 2.30 We accept that achieving complete coverage will be challenging and, given that fibre deployment is at its early stages, the scale of that challenge is still unknown. However, we

²⁹ Thinkbroadband has published data that suggests that more than 80% of new build premises in the period January to July 2019 had full fibre and that the proportion of new build premises with full fibre has increased year on year. Thinkbroadband, November 2019. [New build premises superfast coverage still behind UK average](#). [accessed 12 December 2019]

³⁰ For the avoidance of doubt, by 'available to be ordered for those premises', we mean that a telecoms provider can immediately order an ultrafast service from Openreach.

believe it is important that Openreach completes coverage in an area as much as is practicable.³¹

- 2.31 Our proposals to require Openreach to complete coverage in an exchange area as a condition for the copper charge control to be lifted should have the effect of providing the incentive on Openreach to complete coverage in an area, rather than either just deploying fibre where there is a competing network in an area, or just providing sufficient ultrafast coverage to deter competitor investment, and then shifting resources to another area and thus cumulatively deterring competitor investment across a wider area.

A two-year transition period

- 2.32 Respondents to our March consultation had mixed views on whether two years was an appropriate time period for the transition. Some believed this period should be shorter to improve the business case for investment, some agreed with our proposal, while others said the period of regulatory transition should be longer to reflect the potential time needed for customer-led migration. We also note that stakeholders supported a reasonable period of migration in responding to Openreach's separate consultation on its proposals.
- 2.33 The two-year transition period is as long as the longest consumer contract length, which typically dictates the cycle of contacting customers, and should therefore be sufficient for broadband providers to engage with customers in relation to migration to fibre. The transparency measures that we set out below should allow providers greater visibility of the timing of any changes to services and pricing and to plan their commercial activities accordingly.
- 2.34 During the period of transition, wholesale providers' incentives to compete for copper services may weaken, due to the expected removal of the charge control on copper services once the exchange area is complete. This applies in particular to those premises that are in the remaining (up to) 25% that do not yet have Openreach ultrafast coverage.³² In these cases, customers could be in the position where only copper services are available if they want to buy new services, or renew contracts for existing services. However, given that this will represent only a small proportion of the market and will be transitory, and given providers' incentives to retain customers, we do not believe this will have a significant effect on retail competition.

Transparency and monitoring

- 2.35 Openreach publishes information on its planned fibre rollout, which includes details of exchanges where it plans to start fibre rollout in the near future.³³ For exchanges where Openreach has announced plans or has commenced rollout as part of its Fibre First

³¹ We also note that the Government is seeking to address some of the challenges such as wayleaves through its 'barrier busting' taskforce, which further may assist Openreach reaching complete coverage in an exchange.

³² Note that the stop sell only applies to premises where there are fibre services available, and not to those where there are only copper services (including that stop sell does not apply when ultrafast services are only available using G.fast).

³³ Openreach, [Our transparency](#). [accessed 12 December 2019]

- programme, we propose to impose further obligations on Openreach to provide additional information to increase transparency to industry and customers on when the changes in regulation will take place as a result of copper retirement.
- 2.36 We propose to make Openreach subject to an obligation to notify publicly, in writing, giving 12 months' notice, of when it expects to reach the thresholds of 75%, and when it expects to complete ultrafast coverage. These expected dates would then represent the earliest dates that Openreach could make changes to prices and service availability. In the case of complete ultrafast coverage, the earliest expected date must be no less than 2 years after the commencement of 'stop sell' in that exchange. This obligation is in addition to the obligation to notify set out in the general access obligation that requires Openreach to give notice of 90 days for changes to prices, terms and conditions relating to existing WLA services (see Section 3).
- 2.37 There is a risk that Openreach may rely upon the combination of 'stop sell' and industry expectations that the copper charge control will be removed to drive migration but then not complete ultrafast coverage in an area. We believe this transparency measure will somewhat mitigate this risk.
- 2.38 In most cases we expect Openreach to have reasonable certainty when it notifies that it will achieve the 75% and complete coverage thresholds. When it notifies the date at which it expects to reach 75% coverage it will have completed planning in an area and will have a good understanding of the resources necessary to achieve 75% coverage. When it notifies the date when it expects to complete coverage in an exchange area it will typically have been building in an area for at least 2 years, so will have a good understanding of the nature of any remaining difficult cases and the action it needs to take to achieve coverage.
- 2.39 We also propose that Openreach publishes a notification when it actually reaches 75% and (after a minimum of two years) completes coverage in an exchange, so providers are clear when the thresholds have been met that trigger changes in regulation.
- 2.40 We set out how we propose to implement the proposed transparency measures described above in Section 3.
- 2.41 We propose to engage with Openreach in relation to premises where Openreach does not believe it can reach 100% ultrafast coverage in an exchange area, and why these premises should be excluded for the purposes of calculating whether coverage is complete. This engagement will allow any inconsistencies between the use of the exclusion provisions and the intent of these provisions to be identified and addressed early.
- 2.42 In some cases, Openreach will be seeking to migrate customers to its fibre network in areas where there is a competing network. Some competing network providers have expressed a concern that there are reasonable switching systems in place between networks so that a competing network operator has an equal opportunity to win customers moving from copper.
- 2.43 Our proposals to require Openreach to provide transparency of when it expects to reach the coverage thresholds that trigger changes in regulation should allow competing networks to

also plan their commercial activities to attract retail or wholesale customers onto their network during the migration to fibre.

- 2.44 Furthermore, the EECC specifies new requirements for all types of switches including where customers switch full-fibre services and between different physical networks. We are currently consulting on changes to the General Conditions to implement these EECC requirements.³⁴

Impact of our proposals

Retail services

- 2.45 As we set out in Section 5, we propose to set a charge control for wholesale FTTP 40/10 services at a premium to the charge control for FTTC 40/10. The extent to which this leads to higher prices for retail services will depend upon the extent to which higher wholesale costs are offset by lower costs for providers and the extent of retail competition.
- 2.46 As broadband providers migrate services to fibre, they may withdraw standard broadband services (that rely on SMPF/MPF wholesale copper services) in areas with fibre. Customers of these services may face larger price rises than customers currently using superfast broadband, as standard services are typically offered at lower prices than superfast.
- 2.47 However, we anticipate that by the time that broadband providers consider withdrawing standard broadband services in areas where there are fibre services, only a small proportion of customers in these areas will still be using standard broadband. To the extent that customers do not want to pay more for higher service quality, we currently expect providers will have commercial incentives to offer alternative services, either on the Openreach network, or using other networks. We set out below how we expect to ensure that vulnerable consumers will continue to be protected.

Protecting vulnerable consumers during the migration to IP

- 2.48 Investment in full fibre and retirement of copper services is part of a wider transformation of the UK's telecoms infrastructure. On Openreach's network this also includes the migration of voice services to IP technology and the withdrawal of traditional analogue telephony by 2025. This is known as 'PSTN Switch-off'.^{35,36} In the future, voice and broadband services will both be provided using IP, on both copper and fibre networks.
- 2.49 This migration to IP will be straightforward for most customers. However, some may require additional support to help them update their services, for instance, customers with care

³⁴ Ofcom, 2019. *Fair treatment and easier switching for mobile and broadband customers: Proposals to implement the new European Electronic Communications Code*. See: Section 7 - Switching and porting.

https://www.ofcom.org.uk/_data/assets/pdf_file/0032/184757/consultation-proposals-to-implement-new-eecc.pdf

³⁵ PSTN stands for Public Switched Telephone Network: the legacy network used for landline phone calls.

³⁶ Openreach proposes to restrict new supply of WLR3 in September 2023 and withdraw WLR in 2025.

alarms who will need to have certainty that their alarms will continue to work before they migrate their service to IP.

- 2.50 In February, we set out the roles and responsibilities of different organisations, and our expectations of telecoms providers to ensure a smooth migration to IP.³⁷ Since then, Openreach has announced trials in Mildenhall and Salisbury with the aim of testing how to migrate customers safely and smoothly to IP services and to fibre networks. We consulted on proposed changes to regulation necessary to support the trial in Salisbury and set out that we would be working with industry to put appropriate safeguards in place for the protection of vulnerable customers during the trial, including the ability to pause their migration or to restore their copper services at short notice if necessary.³⁸
- 2.51 For most of the country, copper retirement will come sometime after PSTN Switch-off: that is after 2025. Where this is the case, the challenges of migrating vulnerable customers to IP technology would already have been addressed as part of the PSTN Switch-off. However, under its current proposed timeline, Openreach proposes to stop selling new copper services in some areas ahead of 2025, so in these areas the challenges of migration to IP will need to be addressed in parallel.
- 2.52 In broad terms, the challenges with migration to IP that we set out in February and in relation to migration to fibre that we set out in the Salisbury consultation apply to the broader copper retirement. The definition and identification of vulnerable consumers, and the development of processes to protect them, is the responsibility of the whole industry. We are aware of ongoing work by industry to develop processes to protect vulnerable consumers, and we will continue to work with industry to put appropriate safeguards in place to protect vulnerable consumers.³⁹
- 2.53 We are also concerned to ensure that those customers who cannot migrate to fibre services because their care devices do not work on a fibre service are not facing higher prices after the copper charge control is lifted in an exchange. While this is likely to concern very few customers, we would expect that, for those customers, broadband providers would maintain the same prices charged to those customers for their legacy service before the charge control is lifted. We will engage with broadband providers to discuss this.
- 2.54 In support of these safeguards, Openreach has offered to commit to continue to provide copper services, at similar prices to those in areas subject to a charge control, to vulnerable customers throughout this review period even when the charge control has been removed (i.e. as stated above, after the end of the transitory period and when fibre is available to the premises). This would include reconnecting or providing new copper services when a

³⁷ Ofcom, February 2019. *The future of fixed telephone services*. [accessed 12 December 2019]

³⁸ Ofcom, 2019. *Promoting competition and investment in fibre networks*. [accessed 12 December 2019]

³⁹ By vulnerable consumers, we mean those consumers dependent on their copper line for telecare services and who have not yet been switched to IP, and for whom care alarms may not work over fibre services at the time of the fibre installation. IP migration may also affect consumers not confident with switching e.g. elderly consumers, who will need extra help, and consumers wanting to call 999 during a power cut who do not have a mobile or who have poor mobile coverage, for whom we expect there to be battery backup available from retail CPs (otherwise they will breach their obligation to ensure emergency calls).

customer becomes vulnerable or who cannot become connected to fibre due to the need to support services such as telecare alarms.

Voice-only services

- 2.55 We expect that, despite the move to fibre connections, some consumers will continue to want access to voice-only services or have a need only for basic internet access at an affordable price.
- 2.56 There will be a wholesale service supporting the provision of a voice-only service on fair and reasonable terms. As set out in Section 9 of Volume 2, we propose to deregulate the provision of WLR and ISDN 2/30 services from April 2021. However, Openreach has committed to continue to provide new requests for these services until December 2023 and support existing services until December 2025 on a fair and reasonable basis, including in relation to the price of these services. In addition, as set out in Section 5, Openreach will make available a low bandwidth service over FTTP, which can be used to provide voice only services. This service will be subject to the general access requirements and therefore have to be provided on fair and reasonable terms.
- 2.57 Generally, as for standard broadband customers, we would expect that the competitive market will respond by developing a broad range of products to meet the needs of consumers. We will monitor developments in the market closely and consider whether regulatory interventions, beyond any universal service requirements, are needed to protect consumers.

Other issues

- 2.58 We recognise that migrating business customers to voice and broadband services provided over fibre connections will face additional technical and practical challenges given they may purchase multiple services across multiple sites from multiple providers. We are aware that Openreach, communications providers and the OTA2 are working to address those challenges. We also support Openreach's Salisbury and Mildenhall trials as they will offer valuable learning points for business migrations as well as consumer ones.
- 2.59 In relation to CNI, as mentioned above, we are not removing the access obligation in relation to existing copper services (with the exception of premises where the stop sell applies). This means that CNI customers will continue to be able to use their current copper services although, in exchanges where ultrafast is complete, they may see price increases following on from the removal of the copper charge control. In addition, Openreach has offered to commit to continue to provide existing WLR and ISDN services throughout this review period. In combination, our proposal to retain the access obligation on existing services and Openreach's commitment on WLR and ISDN will support the continuation of these critical services.

Table 2.2: Summary of proposals where regulatory requirements will change with copper retirement

Scenario:	Start of regulation	First threshold - 75% ultrafast		Second threshold - 100% ultrafast/exemption		
	Existing services at start of market review period	Premises where FTTP is not available	Premises where FTTP is available	Exempted premises with no form of ultrafast	Premises where FTTP is not available	Premises where FTTP is available
MPF and SLU products						
"new forms of access"			No NA: migration, No CC, F&R			
MPF	NA CC	NA CC	Stop Sell CC	NA CC	NA CC No NA: Migration	Stop sell No CC F&R: terms
SLU	NA No CC F&R	NA No CC F&R	Stop sell No CC F&R	NA No CC F&R	NA No CC F&R No NA: Migration	Stop sell No CC F&R: terms
VULA copper products						
"new forms of access"			No NA: migration, No CC, F&R			
40/10 FTTC; SOGEA; G.fast; and SOG.fast	NA: FTTC/Gfast CC: FTTC F&R: SOGEA	NA: FTTC/Gfast CC: FTTC F&R: SOGEA	Stop sell CC: FTTC F&R: SOGEA	NA: FTTC/G.fast CC: FTTC F&R: SOGEA	NA: FTTC/G.fast CC: FTTC F&R:SOGEA	Stop sell No CC F&R: terms
Other FTTC; SOGEA; G.fast; and SOG.fast	NA: FTTC/G.fast No CC: A2 RAB A3 F&R	NA: FTTC/G.fast No CC: A2 RAB A3 F&R	Stop sell No CC: A2 RAB A3 F&R	NA: FTTC/G.fast No CC: A2 RAB A3 F&R	NA: FTTC/G.fast No CC: A2 RAB A3 F&R	Stop sell No CC F&R: terms
VULA fibre products						
"new forms of access"			NA, CC, F&R.			
FTTP 40/10			NA, CC: variant			
FTTP other			NA, No CC, F&R			

Key to Table 2.2:

NA - Network access requirement applies (incl F&R)

NA: FTTC/G.fast - Network access requirement applies to FTTC or G.fast. OR can provide SOGEA/SOG.fast voluntarily.

No NA: migration - No network access requirement, except for FTTP, SOGEA, SOG.fast migration

Stop Sell - Stop sell on new requests (no change to existing services)

CC - Charge control applies

CC: FTTC - Charge control applies on FTTC or, if not available, on G.fast

CC: variant - Charge control applies where network access to VULA copper not available or not required

No CC - No charge control

No CC: A2 – No charge control in area 2

RAB A3 - RAB applies in Area 3 on FTTC/SOGEA or, if not available, on G.fast/SOG.fast

F&R - Fair and reasonable terms and conditions apply

F&R: terms - F&R applies to terms but not to charges

Consultation question(s)

Question 2.1: Do you agree with our proposed approach to copper retirement? Please set out your reasons and supporting evidence for your response.

3. General remedies: physical infrastructure, WLA, LL Access and IEC markets

Introduction

- 3.1 In this section, we set out the general remedies that we propose to impose on Openreach, designed to address the competition concerns that we have provisionally identified in our market assessment (Volume 2) and in line with our proposed approach to remedies (Section 1).
- 3.2 The proposed general remedies would require Openreach to provide network access plus any necessary ancillary services in the markets where we have provisionally identified BT as having SMP. These are the markets for physical infrastructure in the UK, wholesale local access (WLA) in Area 2 and Area 3, leased lines access (LL Access) in Area 2, Area 3 and the High Network Reach area, and inter-exchange connectivity (IEC) in BT Only and BT+1 exchanges (which we refer to collectively as the “relevant fixed telecoms markets”). The proposed general remedies are similar to those imposed in the 2019 PIMR, 2018 WLA and 2019 BCMR.

Table 3.1: Summary of the proposed general remedies

Proposed remedies
Requirement to provide network access on reasonable request
Requirement to publish and operate a process for requests for new forms of network access (SoR)
Requirements for equivalence of inputs (EOI) and no undue discrimination (NUD)
Requirement to publish a Reference Offer (RO)
Requirement to notify changes to charges, terms and conditions
Requirement to notify technical information
Requirement for quality of service (QoS)

- 3.3 We describe below the form of remedy which we are proposing to impose in each market and the extent to which we propose that remedy should apply. This includes how we propose to apply the general remedies in the WLA market in view of our approach to copper retirement, our proposed exemptions to the general remedies in each market, and our proposed approach to certain commercial terms offered by Openreach.

Requirement to provide network access on reasonable request

Our proposals

- 3.4 For each of the relevant fixed telecoms markets, we are proposing that Openreach must offer network access where a third party reasonably requests it, and must do so on fair and reasonable terms and conditions, as soon as it is reasonably practicable. We believe that this obligation should include a requirement for Openreach to provide network access at fair and reasonable charges where there is no charge control⁴⁰ or where no basis of charges obligation applies. We also propose that this obligation includes the power for Ofcom to make directions in order that we can secure the supply of services and, where appropriate, fairness and reasonableness in the terms and conditions (and in certain circumstances, also the charges) of network access.

Our reasoning

- 3.5 We consider that our proposed network access obligation is appropriate and proportionate in relation to BT's market power in each of the relevant fixed telecoms markets.
- 3.6 The level of investment required by a third party to replicate Openreach's physical infrastructure, WLA, LL Access and/or IEC networks, and the time it would take to do this are significant barriers to entry.
- 3.7 We note that the ATI Regulations provide for a telecoms provider to access BT's physical infrastructure on fair and reasonable terms. However, we consider that these regulations do not address our competition concerns sufficiently such that it would be unnecessary to impose an obligation to provide network access on BT. In particular, we consider that the ATI Regulations do not incentivise network deployment at scale because they do not offer sufficient certainty to access seekers and do not regulate in sufficient detail the terms of the network access.⁴¹ We therefore consider that achieving effective competition in the context of all relevant fixed telecoms markets requires robust SMP regulation and a general network access obligation would provide the necessary foundation for such regulation.
- 3.8 An obligation requiring Openreach to provide network access where a third party reasonably requests it is therefore vital to promoting and protecting competition in downstream markets. Without such a requirement BT would have the incentive and ability to refuse access at the level of each relevant fixed telecoms market or provide access on less favourable terms, thereby benefiting its own retail divisions and hindering downstream competition, ultimately against the interests of consumers.
- 3.9 Our proposed network access obligation includes an obligation on Openreach to provide any ancillary services that are necessary to make effective that network access. We note that certain ancillary services, such as accommodation and cablelink, may be used to support

⁴⁰ This includes cost-based charge controls and price caps.

⁴¹ For further discussion of the ATI Regulations, see paragraphs 4.5 to 4.16 of Volume 1, 2019 PIMR and BCMR Statement.

network access in multiple markets. To facilitate efficient use of the network, we propose to allow telecoms operators the flexibility to use ancillary services across multiple types of access, i.e. cross-market. In addition, to facilitate transparency, we would expect that Openreach's product pages provide clear signposting and clear naming of available ancillary services within a given market and, for clarity, of ancillary services that may be used to support multiple markets.

Disapplication of the general network access obligation in relation to copper retirement

- 3.10 In Section 2 we set out how we propose to support the copper retirement process, i.e. the transition from copper-based services to fibre-based services in the WLA market. In particular, we propose a phased removal of the current regulation of copper-based services. To implement this regulatory approach to copper retirement, we propose to limit the general network access obligation on BT in the WLA market in two ways.
- 3.11 First, we propose that from the start of the review period the general requirement to provide network access on reasonable request does not apply to new forms of network access using BT's copper network, unless to facilitate migration to ultrafast broadband, including FTTP, G.fast and SOG.fast.
- 3.12 Second, in exchange areas where Openreach has made ultrafast broadband available to 75% of premises, we propose that, for the premises where FTTP is available, the general requirement to provide network access on reasonable request should not require Openreach to meet new requests for any network access which uses its copper network, including MPF, FTTC and G.fast services.⁴²
- 3.13 This limited application of the general remedies would allow Openreach to focus on the deployment of new FTTP services, while ensuring that telecoms providers can safely migrate customers that are currently using copper-based services.

Fair and reasonable pricing

- 3.14 We provisionally consider that for each relevant fixed telecoms market there is risk that Openreach might fix or maintain some or all of its prices for network access at an excessively high level, or impose a price squeeze in relation to such access so as to have adverse consequences for end-users of public electronic communications services.⁴³
- 3.15 To address the risk of excessive pricing, we are proposing to impose on Openreach a charge control obligation for most of our proposed specific access obligations (PIA, MPF, VULA, VULA 40/10, specific types of leased lines⁴⁴, specific types of dark fibre⁴⁵) and certain ancillary services, and a basis of charges obligation for all other existing PIA services and for

⁴² We are proposing to include in our SMP conditions a provision that will maintain the regulatory changes necessary to support the trial in Salisbury should we decide to adopt our consultation proposals.

⁴³ For the leased lines access market HNR Areas, we propose only to find a risk that Openreach might impose a price squeeze in relation to such access so as to have adverse consequences for end-users of public electronic communications services.

⁴⁴ Ethernet and WDM at all bandwidths in the LL Area 3 and IEC markets.

⁴⁵ Dark fibre access in the LL Area 3 market and dark fibre inter-exchange in the IEC markets.

certain ancillaries including electricity (see sections 4 to 6). To the extent that a charge control or a basis of charges obligation applies, we do not consider that the residual risk of a price squeeze is sufficient to warrant further regulation. This is because a control on wholesale charges means BT could only impose a price squeeze by lowering the retail price, rather than by raising the wholesale price, which is likely to make margin squeeze more costly for BT and therefore less likely.

- 3.16 In relation to new forms of network access requested under the general network access condition, we consider that the effects of the proposed charge controls and/or basis of charges obligations will depend on the market in question.
- 3.17 In the physical infrastructure market, we are concerned that BT will have the incentive and ability to set excessive prices and to impose a price squeeze in relation to new forms of network access. This is because some new forms of physical infrastructure access may be very difficult to replicate by rival operators, and the specific PIA product and any active services are unlikely to be good substitutes.
- 3.18 In the WLA, LL Access and IEC markets we expect the charge controls and/or basis of charges obligations to act as an anchor to limit the risk of excessive pricing on new forms of network access. Nevertheless, given BT's vertical integration and significant market power, we consider that in these markets there is again a risk of a price squeeze in relation to other forms of network access.
- 3.19 Consequently, we propose to impose in each relevant fixed telecoms market an obligation for charges for network access to be fair and reasonable, except to the extent that a charge control or a basis of charges obligation applies. Our general position is that we would interpret this fair and reasonable obligation to mean that:
- a) in the physical infrastructure market, BT should not set prices that result in excessive pricing; and
 - b) in each relevant fixed telecoms market, BT should not set prices that would equate to a margin squeeze under *ex post* competition law for existing and new forms of network access.⁴⁶
- 3.20 This provision would also enable us to intervene more quickly where charges are not fair and reasonable than if we relied solely on *ex post* competition law.
- 3.21 In addition, we believe it is appropriate for this proposed condition to include the power for Ofcom to make directions in order to secure the supply of services, and where appropriate, fairness and reasonableness in the terms and conditions (and possibly charges) of network access. Therefore, we propose that the condition for each relevant fixed telecoms market includes a requirement for BT to comply with any such direction(s).

⁴⁶ While we would assess any dispute on the relevant facts, our starting point for evaluating cost and margins in this context would be to allow a LRIC retail margin on each service, assessed by reference to an equally efficient operator (EEO) standard.

Conclusion

- 3.22 We consider that the proposed requirement in each relevant fixed telecoms market for Openreach to provide network access on reasonable request is proportionate in that it is targeted at addressing the market power that we have provisionally found BT holds. We do not consider that a different type of obligation or a more limited network access requirement would be sufficient to address the competition concerns we have identified. We also propose that charges should be fair and reasonable only where there is no charge control or basis of charges obligation, and propose a phased removal of regulation on copper-based services, such that there is no unnecessary overlap of regulation.
- 3.23 In order to implement these proposals, we propose to set the SMP Condition 1 published in Volume 5. Section 87(1) of the Communications Act 2003 (the Act), provides that, where we have made a determination that a person (here BT) has SMP in an identified services market, we shall set such SMP conditions authorised by that section as we consider appropriate to apply to that dominant provider in respect of the relevant network or relevant facilities and apply those conditions to that person. Specifically, section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to give such entitlements as Ofcom may from time to time direct as respects the provisions of network access to the relevant network, the use of the relevant network and the availability of relevant facilities.
- 3.24 In determining which conditions are authorised by section 87(3) to set in a particular case, we must take into account, in particular, the factors set out in section 87(4). In this case:
- the economic viability of building alternative access networks means that in the absence of regulatory intervention, it is unlikely that there will be significant network build by telecoms providers other than Openreach.;
 - we consider that it is feasible for Openreach to provide the physical infrastructure access and the active remedies we are proposing to require, and we have designed the scope of our proposed requirements with this in mind;
 - we do not consider that our proposal will risk undermining investment made by Openreach in its network; and
 - we consider that our proposed network access requirement is an important element of securing economically efficient network-based competition.

Consistency with the BEREC Common Positions

- 3.25 We have taken utmost account of the BEREC Common Positions on wholesale leased lines⁴⁷ and wholesale (physical) network infrastructure access⁴⁸ in formulating our proposals discussed above which appear to us to be particularly relevant in this context. We consider

⁴⁷ BEREC, 2012. [BEREC Common Position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines](#) (BoR (12) 126), [accessed 12 December 2019]

⁴⁸ BEREC, 2012. [BEREC Common Position on best practice in remedies on the market for wholesale \(physical\) network infrastructure access \(including shared or fully unbundled access\) at a fixed location imposed as a consequence of a position of significant market power in the relevant market](#) (BoR (12) 127), [accessed 16 December 2019]

that our proposals are consistent with the best practice set out in the BEREC Common Positions.

Requests for new forms of network access

Our proposals

- 3.26 We propose a condition in each relevant fixed telecoms market regarding the process by which Openreach must address requests for new forms of network access (known as the Statement of Requirements or SoR process). This form of proposed condition would require Openreach to publish guidelines in relation to requests for new forms of network access (which must provide for Openreach to respond to these requests in a reasonable amount of time, have clear and transparent criteria to assess requests and to set out clear reasons for rejecting requests) and would allow Ofcom to direct Openreach to make amendments to those guidelines.

Our reasoning

- 3.27 We are of the view that a requirement to have a process by which Openreach must address requests for new forms of network access is an appropriate and proportionate *ex ante* measure to complement the general network access requirement discussed in the preceding sub-section.
- 3.28 Vertically integrated telecoms providers have the ability and incentive to favour their own downstream business over third-party telecoms providers by differentiating on price or terms and conditions. Where a telecoms provider has SMP at the upstream level, such discrimination can harm competition in downstream markets. One form of discrimination is in relation to the handling of requests for new types of network access. This has the potential to distort competition at the retail level by placing third-party telecoms providers at a disadvantage compared with the downstream retail business of the vertically integrated provider with SMP. We consider BT is in this position in each of the relevant fixed telecoms markets in which we have found it to have SMP.
- 3.29 We note that the SoR process for all relevant fixed telecoms markets was revised in 2018 to include a high level of scrutiny by Openreach governance.⁴⁹ We expect that Openreach will undertake this process more independently and transparently than before separation. Following the separation of Openreach from BT, the new arrangements are intended to provide Openreach with more independence to take its own decisions.⁵⁰

⁴⁹ See Openreach response to 2018 BCMR Consultation, page 32, paragraph 149; also Openreach, 5 Mar 2018. "[GEN010/18 Changes to the Industry Statement of Requirements Process](#)". [accessed 12 December 2019]

⁵⁰ Ofcom, 2018. "[Delivering a more independent Openreach – Interim monitoring update](#)". [accessed 12 December 2019]

Conclusion

- 3.30 The form of requirement we are proposing only goes as far as we consider is necessary to address our concerns. Rather than specifying the exact process that Openreach must follow, the condition we are proposing for each relevant fixed telecoms market allows Openreach to implement its own process within certain parameters. In particular, we propose to impose a condition requiring Openreach to publish guidelines in relation to requests for new forms of network access (which must provide for Openreach to respond to these requests in a reasonable amount of time, have clear and transparent criteria to assess requests and to set out clear reasons for rejecting requests) and providing for power of direction to allow Ofcom to direct Openreach to make amendments to those guidelines.
- 3.31 In order to implement this proposal, we propose to set the SMP Condition 3 published in Volume 5. Section 87(5), allows Ofcom to implement SMP services conditions securing fairness and reasonableness in the way in which requests for network access are made and responded to and for securing that the obligations in the conditions are complied with within periods and at times required by or under the conditions.

Consistency with the BEREC Common Positions

- 3.32 We have taken utmost account of the BEREC Common Positions on wholesale leased lines⁵¹ and wholesale (physical) network infrastructure access⁵² in formulating our proposals discussed above, including BP6/BP15 (respectively) which appear to us to be particularly relevant in this context. We consider that our proposals are consistent with the best practice set out in the BEREC Common Positions.

Requirements for equivalence of inputs (EOI) and no undue discrimination (NUD)

Our proposals

- 3.33 While we do not consider it is appropriate or proportionate to impose an EOI requirement in the physical infrastructure market, we propose to impose a no undue discrimination requirement on Openreach in that market that applies to all forms of network access provided by Openreach. We would interpret this condition as requiring strict equivalence in respect of all processes and sub-products that contribute to the supply and consumption of network access services in the physical infrastructure market, unless Openreach can demonstrate that a difference is justified in any particular case. We also propose a requirement on Openreach to publish such information on non-discrimination in relation to network access in the physical infrastructure market as we may direct.

⁵¹ BEREC, BoR (12) 126

⁵² BEREC, BoR (12) 127.

- 3.34 We propose to impose an EOI requirement on Openreach in relation to all services in the WLA, LL Access and IEC markets, except in relation to (insofar as relevant to each market): services which are not already supplied on a EOI basis; accommodation services other than in relation to the allocation of space and power; sub-loop unbundling; Openreach's use of dark fibre as an input to active services; wholesale WDM circuits; BT's core network; and such provision of network access as Ofcom may consent to in writing. In cases where this EOI requirement does not apply due to exemptions as listed, we propose that a no undue discrimination (NUD) obligation applies instead.
- 3.35 We consider that these proposed non-discrimination requirements are appropriate and proportionate in relation to BT's market power in each of the relevant fixed telecoms markets in relation to which they are proposed.

Our reasoning

- 3.36 Strong downstream competition, facilitated by alternative network build, is vital to ensure the best outcomes for consumers. To achieve this, it is important that Openreach does not unduly discriminate between different customers when supplying access services. Wherever possible, it should provide access to BT downstream, non-BT access seekers and internally to Openreach itself on the same terms. Without this level playing field, BT could engage in practices that could distort downstream competition, for example by providing access on less favourable terms compared to those obtained by its own downstream businesses. This may in turn discourage alternative network deployment, negatively affecting consumer outcomes.
- 3.37 A non-discrimination obligation is intended to prevent such discrimination in favour of BT's own downstream divisions. Of the various forms of non-discrimination obligation, we consider equivalence of inputs (EOI) to be the most effective. EOI is a strict form of non-discrimination, i.e. a complete prohibition of discrimination with no discretion. The dominant provider supplies exactly the same services to all telecoms providers (including its own downstream divisions) on the same timescales, terms and conditions (including price and service levels), by means of the same systems and processes and by providing the same information. The inputs available to all providers (including the dominant provider's own downstream operations) would be provided on a truly equivalent basis.
- 3.38 In considering our approach to imposition of a non-discrimination obligation, we have noted the 2018 BT Commitments, in which BT commits to providing SMP products on an equivalence of input basis.⁵³ As a result, our starting point is to propose EOI should apply to all SMP services, unless otherwise stated.
- 3.39 However, we acknowledge that an EOI-based approach – whilst optimal as a starting position – may not be appropriate or proportionate for every product in the access market. We therefore propose to exempt certain products from the EOI obligation, as set out below.

⁵³ [2018 BT Commitments](#), paragraph 5.3. SMP products are outlined, in para 3.2, as: dark fibre access, MPF, physical infrastructure access, relevant ethernet services, relevant WDM services and VULA. [accessed 12 December 2019]

Equivalence of inputs

Physical infrastructure market

3.40 In the physical infrastructure market, we consider that the application of the strict EOI obligation in relation to network access would not be appropriate at this time, given the cost, disruption and time involved in Openreach re-engineering its existing legacy processes and systems in order to comply with the obligation. The difficulties involved in implementing a strict EOI obligation would make an immediate obligation disproportionate. Consequently, we have considered the extent to which a more limited form of non-discrimination obligation is appropriate to be applied in relation to the physical infrastructure market (see “no undue discrimination” below).

WLA, LL Access and IEC markets

3.41 In the WLA, LL Access and IEC markets, we consider that EOI is likely to be the most effective approach to limit the ability of Openreach to discriminate in respect of network access. This is because Openreach is already providing most services in these markets on EOI basis and we expect it to continue doing so in future. Therefore, we propose to impose an EOI requirement covering all WLA, LL Access and IEC services (including all future requests for network access), except where exemptions are specifically identified (see “exemptions to EOI” below).

3.42 In its response to our March 2019 Approach to remedies consultation, BT and Openreach argued that we should reconsider the need for an EOI obligation. They considered that the obligation could be interpreted as limiting Openreach’s ability to meet the needs of specific customers in the context of market testing and commercial access agreements. BT requested that Ofcom explain how it would assess EOI and no undue discrimination in the context of tenders and commercial access arrangements more generally.⁵⁴

3.43 We note that EOI does not prevent Openreach from innovating or tailoring its services to meet telecoms provider needs. It simply means that any service must be made available to all telecoms providers on the same basis. So, if Openreach offers a particular commercial access arrangement, this must be made available on the same terms to all telecoms providers. We also note that one proposed EOI exemption is that Ofcom should be able to consent in writing to the provision of network access on a non-EOI basis where circumstances warrant (this is set out in the following sub-section).

Exemptions to EOI

3.44 To ensure that the proposed EOI requirement on Openreach is proportionate, in the following paragraphs we have considered several exemptions from its application. Given that we do not propose an EOI obligation in the physical infrastructure market, the proposed

⁵⁴ BT response to March 2019 consultation, paragraphs 4.27 to 4.29. Openreach response to March 2019 consultation, paragraph 78.

exemptions are only relevant to the WLA, LL Access and IEC markets. These exemptions are outlined in Table 3.2 below.⁵⁵

Table 3.2: Proposed exemptions to the EOI condition in the WLA, LL Access and IEC markets

Market: WLA, LL Access and IEC	
Existing network access not required to be provided on an EOI basis ⁵⁶	
Accommodation services, other than in relation to the allocation of space and power	
Such provision of network access as Ofcom may consent to in writing	
Market: WLA	LL Access and IEC
Sub loop unbundling (SLU)	Dark fibre as an input to active services
	Wholesale WDM circuits
	BT's core network

Existing network access not required to be provided on an EOI basis: WLA, LL Access and IEC markets

3.45 We propose that the EOI obligations should not apply such that network access currently provided other than on an EOI basis in the WLA, LL Access and IEC markets has to now be provided on an EOI basis. This would ensure that where investment has already taken place because of previous deregulation, Openreach is not required to identify and re-engineer existing network infrastructure, a process that is likely to involve significant costs and time, and be very disruptive for Openreach. This is consistent with the approach we have taken in previous market reviews.⁵⁷

Accommodation services, other than in relation to allocation of space and power: WLA, LL Access and IEC markets

3.46 The availability of accommodation services in BT exchanges is an important enabler of competition in the WLA, LL Access and IEC markets as well as the physical infrastructure market. It allows telecoms providers to make use of disaggregated products such as FTTP and EAD Local Access and facilitates competition in downstream markets. Space and power in BT's exchanges are particularly limited, and in the absence of regulation BT would have the incentive and ability to discriminate in favour of its own needs in allocating such space and power.

3.47 However, 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. BT's

⁵⁵ We are also proposing to include in our SMP conditions a provision that will maintain the regulatory changes necessary to support the trials in Salisbury and Mildenhall should we decide to adopt our consultation proposals.

⁵⁶ For example, this proposal would allow BT to offer its Microconnect Distributed Antenna (MDA) service to all Mobile Network Operators (see Ofcom, 2015, [Request from BT for an exemption from the Undertakings for the Microconnect Distributed Antenna service](#), [accessed 12 December 2019]).

⁵⁷ In the physical infrastructure market BT has so far not provided any network access services on EOI basis. For WLA services see 2018 WLA Statement, paragraph 6.97. For leased lines see 2019 BCMR Statement, paragraphs 11.60 and 11.61, and 2013 BCMR Statement, paragraph 12.201.

downstream divisions are likely to use different accommodation products from those used by other telecoms providers, even if those divisions were required to obtain these products from Openreach.

- 3.48 In order to reflect this, we are proposing an exemption from the EOI requirement on BT for accommodation services other than the allocation of space and power in all relevant fixed telecoms markets (except the physical infrastructure market where we are proposing EOI does not apply). For clarity, in relation to space and power, we propose that it continues to be allocated on first come first serve (FCFS) basis which we see as fair and reasonable approach, and is non-discriminatory.
- 3.49 We note that in our 2018 WLA Statement we did not impose an EOI requirement on BT in relation to allocation of space and power because we considered the arrangements under BT's Undertakings to provide similar protection to telecoms providers.⁵⁸ However, these undertakings are now superseded by the 2018 BT Commitments in which BT commits to an obligation for equal treatment that does not cover the allocation of space and power. Therefore, we propose that the EOI requirement applies to the allocation of space and power in each relevant fixed telecoms market (except the physical infrastructure market where we are proposing EOI does not apply), including the WLA market.

Sub loop unbundling (WLA market)

- 3.50 We propose to exempt Openreach from the application of the EOI obligation to SLU services in the WLA market. It is likely that an EOI obligation in respect of SLU would require Openreach to re-engineer existing services and processes, which would be costly. We consider that this cost would be disproportionate given the current and projected low level of use of SLU services.⁵⁹

Dark fibre as an input to active services (LL Access and IEC markets)

- 3.51 We propose to exempt Openreach from the application of the EOI obligation to our proposed dark fibre remedies (dark fibre access, dark fibre inter-exchange and dark fibre combined) in the LL Access and IEC markets where dark fibre is used by Openreach as an input to its active services.
- 3.52 In practice, imposing an EOI obligation on Openreach would require Openreach to alter its organisational structure to separate the part which uses dark fibre as an input (into the supply of actives) from that which supplies and manages dark fibre. Such an obligation would require Openreach to consume its own dark fibre in the provision of its active and dark fibre products.
- 3.53 Altering Openreach's organisational structure (and implementing the associated systems changes) would increase its overall cost for the provision of active and dark fibre circuits.

⁵⁸ 2018 WLA Statement, paragraph 6.98. Also, see Variations to BT's Undertakings under the Enterprise Act 2002 in respect of BT's NGN, Space and Power and OSS separation https://www.ofcom.org.uk/consultations-and-statements/category-2/variations_bt

⁵⁹ For a discussion of SLU volumes, see Section 5.

These would result in a corresponding increase in the prices of active and dark fibre products to ensure that Openreach can appropriately recover its costs.

- 3.54 An EOI obligation would also make it more difficult for Openreach to meet its other regulatory requirements (such as meeting its quality of service standards). This is because such an obligation would introduce an extra step in the circuit provisioning process making it more difficult for Openreach to hit its targets.
- 3.55 These points are exacerbated by the fact that we are only proposing to impose dark fibre in in Area 3 of the LL Access market and from BT Only exchanges in the IEC market. We expect the dark fibre remedies will affect a minority of total circuits. We discuss potential take-up of both dark fibre remedies in Annex 13.
- 3.56 Additionally, an EOI obligation could result in Openreach having to adopt two different systems and processes for different parts of the country. As the boundary between Area 2 and Area 3 isn't fixed (i.e. it could change in future review periods) Openreach may even have to change its systems again in the future.⁶⁰
- 3.57 For the above reasons we consider that imposing EOI in this specific case would be disproportionate. We believe that a no-undue discrimination obligation addresses our competition concern, without incurring any of the aforementioned disadvantages that would result from Openreach being obliged to provide dark fibre to itself under an EOI obligation only.
- 3.58 The proposed exemption outlined above applies only where Openreach is providing dark fibre to itself. Where Openreach supplies dark fibre downstream to BT or non-BT customers, we propose that an EOI obligation should apply.

WDM services (LL Access and IEC markets)

- 3.59 In the LL Access and IEC markets, telecoms providers may wish to provide leased lines using a combination of their own networks and WDM services from Openreach, using non-standard WDM interfaces to facilitate interconnection. BT's downstream operations, however, may be more likely to use WDM services from Openreach to deliver end-to-end services without interconnection, and would therefore use WDM services with standard interfaces.
- 3.60 Where Openreach provides WDM services to other telecoms providers which differ from those it provides to itself only in relation to the interfaces used, we propose an exemption from the EOI obligation in relation to the prices Openreach charges for these services. Openreach would be required not to discriminate unduly between the prices it charges for such services, which we would interpret to mean that the difference in price between the

⁶⁰ Alternatively, Openreach could choose to change its systems and processes for all of its circuits and operate a single system. We would still consider this disproportionate given that a nationwide change would have to be implemented for the benefit of a relatively small number of circuits limited to a particular geographic area.

variants of the same product should be no greater than the difference between their long-run incremental costs. All other aspects of providing such services would be on EOI basis.

3.61 We believe this proposal is proportionate because Openreach may have no need to consume WDM services with non-standard interfaces and an EOI requirement is therefore likely to have limited effect. This proposal is consistent with our previous regulation of WDM services.⁶¹

3.62 In addition, we note that we have in previous business connectivity reviews exempted Openreach from the EOI obligation in relation to WDM services that are longer than 70km.⁶² This exemption is related to BT's Wavestream National services. To deliver these services, Openreach uses a fibre splice to interconnect the LL Access fibre to the IEC fibre without any active equipment (point-to-point solution), or uses proprietary interfaces for the NTE and core WDM equipment (shared solution). BT has previously submitted that, if Openreach is required to provide the Wavestream National services on an EOI basis, it would need to upgrade its equipment and systems which would significantly increase the cost of delivering these services. We therefore propose to maintain this exemption.

BT's core network (IEC markets)

3.63 In Section 8 of Volume 2, we propose to find BT to have SMP in the IEC market. As a result of our proposed approach to market definition, there are 21 BT exchanges captured by our provisional SMP finding where BT has deployed both backhaul and core nodes (relevant 21 BT exchanges). This means that our proposed EOI obligation would apply to BT's core network at the relevant 21 BT exchanges. We have therefore considered whether the proposed EOI obligation should apply to BT's core network.

3.64 Generally, the core segment of the IEC market is not central to our competition concerns in that market. BT's core network is based on its 21CN network and includes core nodes located in 106 exchanges. The number of core nodes has been relatively stable over time and so we are not expecting any changes in the size of BT's core network in this review period.

3.65 While access to BT's backhaul nodes is essential for enabling rival telecoms providers to deploy inter-exchange connectivity, relative to this access to core nodes is more competitive with a number of rival telecoms providers operating and offering access to their own core networks.⁶³ In our view, imposing an EOI obligation on BT's core network will have no significant impact on the competitive position of telecoms providers seeking access to inter-exchange connectivity at the relevant 21 BT exchanges.

⁶¹ See 2016 BCMR Statement, paragraphs 11.66-11.68; 2016 BCMR Statement, paragraphs 8.90-8.92.

⁶² See 2013 BCMR Statement, paragraph 13.73 and Annex 10 of the 2011 BCMR Consultation.

⁶³ BT is operating core nodes in 106 exchanges. Rival telecoms operators that compete with BT in the provision of core connectivity may not match the same number of core nodes as they may choose to deploy their core network using a different network topology.

- 3.66 BT has also recently informed us that, if EOI is imposed on the relevant 21 BT exchanges, this will create uncertainty in the way BT plans its investments in the core network and will impose disproportionate costs on BT in terms of network resilience and the cost of providing core network services.⁶⁴ In particular, BT has told us that traffic growth on its core network every year is substantial (around [redacted] % per annum), and it therefore needs flexibility to expand capacity on all wavelength routes across the network.
- 3.67 Finally, we note that BT was exempt from the application of EOI to its core network under the former BT Undertakings.⁶⁵ While these BT Undertakings have been superseded by the 2018 BT Commitments, the latter specify that BT will act in accordance with arrangements agreed with Ofcom in respect of all of the exemptions to the Undertakings agreed between BT and Ofcom to date.⁶⁶
- 3.68 Therefore, we propose to exempt BT from its EOI obligation in relation to its core network. The exemption means that in these 21 exchanges BT does not have to provide core connectivity on EOI basis. However, BT's core nodes located in the relevant 21 BT exchanges would still be subject to the proposed no undue discrimination obligation.
- 3.69 Our proposal is consistent with the approach we have taken historically in relation to BT's core.⁶⁷ The only exception to this was the 2019 BCMR where we decided to apply EOI to the 21 BT core nodes on a forward-looking basis. However, as noted above, since this review we have received new information from BT which has improved our understanding of its potential challenges with using its core on an EOI basis.⁶⁸ Based on this new information we have reconsidered our position from the 2019 BCMR.

Ofcom discretion to consent in writing to provision on a non-EOI basis (WLA, LL Access and IEC markets)

- 3.70 In previous reviews, stakeholders have raised concerns about the effect the imposition of an EOI obligation could have on Openreach's ability to respond in a competitive or innovative way to customer requirements in markets where customers have options to use other network operators. In consequence, we have provisionally decided that Ofcom should be able to consent in writing to the provision of network access on a non-EOI basis where circumstances warrant. This is to provide greater flexibility.

No undue discrimination

- 3.71 Where we consider an EOI obligation to be inappropriate or disproportionate, the risk of discriminatory behaviour still arises. As such, we propose to also require Openreach to provide all services on a basis that is not unduly discriminatory. As a result, services that are

⁶⁴ BT, Reregulation of BT's core network BT Group meeting with Ofcom, 1 October 2019; Email from [redacted] (BT) to [redacted] (Ofcom) on "Re-regulation of BT's core network", dated 19 November 2019.

⁶⁵ BT Undertakings, section 5.46.1.

⁶⁶ 2018 BT Commitments, section 25.1.

⁶⁷ See 2013 BCMR Statement, paragraph 12.203-12.204 and 2016 BCMR Statement, paragraphs 4.630-4.631.

⁶⁸ BT, Reregulation of BT's core network BT Group meeting with Ofcom, 1 October 2019; Email from [redacted] (BT) to [redacted] (Ofcom) on "Re-regulation of BT's core network", dated 19 November 2019.

not subject to EOI would still be protected by the no undue discrimination obligation. This applies to all markets where we have identified BT as having SMP. Our interpretation of the no undue discrimination obligation would vary depending on the specific characteristics of each market.

Physical infrastructure market

- 3.72 In the physical infrastructure market we propose to interpret the no undue discrimination SMP condition in relation to network access as requiring strict equivalence in respect of all processes and sub-products that contribute to the supply and consumption of network access, with discrimination permitted only in cases where Openreach demonstrates that a difference in respect of a specific process step or sub-product is justified. Where Openreach can justify any processes or systems used by network users as being different from those used by Openreach, the condition would still require these to be broadly equivalent. This means that any difference must not put network users at a disadvantage, particularly in terms of extra cost, time or uncertainty, compared to the processes Openreach follows internally.
- 3.73 The application of this form of no undue discrimination condition in the physical infrastructure market would mean that any new processes or platforms that contribute to the supply and consumption of network access should be designed and implemented from the outset such that they are equivalent. We envisage that new platforms and/or processes used by Openreach would not differ from those used by other telecoms providers, other than in the most exceptional circumstances. We consider that making new processes equivalent from the outset will not involve the same level of significant cost, disruption and time as associated with re-engineering existing legacy processes. Therefore, differences are far less likely to be justified, compared to the differences that could continue to exist for current legacy processes and platforms.
- 3.74 Under this proposed non-discrimination obligation for the physical infrastructure market, when Openreach charges itself internal transfer charges, it must do so in a manner that is consistent with the charging principles that it applies to determine charges faced by telecoms providers using network access, to the extent that a different approach cannot be justified. These internal transfer charges would then be relevant to any subsequent assessment of whether Openreach's prices for the relevant downstream services are appropriate.
- 3.75 We discuss in more detail compliance with the no undue discrimination obligation in the physical infrastructure market in Annex 12.

WLA, LL Access and IEC markets

- 3.76 In the WLA, LL Access and IEC markets, we propose to interpret undue discrimination to be when a dominant provider "does not reflect relevant differences between (or does not

reflect relevant similarities in) the circumstances of customers in the transaction conditions it offers, and where such behaviour could harm competition.”⁶⁹

Non-discrimination and KPIs in the physical infrastructure market

- 3.77 Given the importance of non-discrimination in creating an environment in which competing providers have the confidence to make very substantial capital investments relying on access to Openreach’s duct and pole network, and given our proposal not to impose an EOI obligation in the physical infrastructure market, we propose an obligation on Openreach to provide transparency around non-discrimination in relation to network access in that market.
- 3.78 Following the commercial launch of the mixed usage PIA product on 1 April 2019, work is underway to identify and implement an appropriate set of KPIs to provide the necessary transparency between PIA and Openreach’s deployment of their own full-fibre networks. This work, including the gathering of appropriate data relating to the consumption of PIA, has resulted in quarterly publication by Openreach of a set of KPIs relating to network build (specifically network adjustments to facilitate network build). Work is continuing to define a broader set of KPIs that cover both network build and in-life performance of the duct and pole infrastructure that networks depend upon. Refinement of these KPIs is expected to continue over a longer period as PIA customers deploy networks at scale.
- 3.79 Accordingly, we do not consider that we need to specify KPIs in relation to services in the physical infrastructure market at this time. However, we propose to impose a requirement on Openreach to publish such information on non-discrimination in relation to network access as we may direct.

Geographic discounts

- 3.80 As we explain in Annex 15, we propose to prohibit geographic discounts on certain fixed telecoms services in the WLA and LL Access markets in order to limit Openreach’s ability to adopt wholesale pricing structures which deter alternative network rollout. In particular, we propose:
- FTTC and G.fast – prohibit geographic discounts on rental charges in each of Area 2 and 3.
 - FTTP – prohibit geographic discounts on rental charges in Area 2.
- 3.81 We will, however, remove the prohibition on geographic discounting with respect to the provision on FTTC in those exchange areas where we have removed the charge control obligations on FTTC in support of copper retirement, i.e. in exchange areas where ultrafast broadband deployment is complete and after a minimum of two years have passed since ultrafast broadband was deployed to 75% of premises, for the premises where FTTP is available.

⁶⁹ Ofcom, 2005. [Undue discrimination by SMP providers](#). [accessed 12 December 2019]

- 3.82 We are also minded to prohibit geographic discounts on rental charges for leased lines in Area 2 (this would not apply to the CLA and HNR areas), and in particular invite stakeholder comments and evidence on this proposal.
- 3.83 We have reflected this in our proposed non-discrimination obligations for the WLA and LL Access markets.

Conclusion

- 3.84 We consider the proposed imposition of the non-discrimination conditions as detailed above to be proportionate in that they seek to prevent discrimination that would adversely affect competition and ultimately cause detriment to citizens and consumers. Furthermore, we consider that these requirements represent the minimum required to address our competition concerns; in particular, our EOI requirement only applies to existing products where Openreach is already providing services on an EOI basis.
- 3.85 To implement these decisions, we have provisionally decided to set the SMP Conditions 4 and 5 in Volume 5. Section 87(6)(a) of the Act authorises the setting of an SMP services condition requiring the dominant provider not to discriminate unduly against particular persons, or against a particular description of persons, in relation to matters connected with network access to the relevant network or with the availability of relevant facilities. Section 87(6)(b) of the Act authorises the setting of an SMP services condition requiring the dominant provider to publish, in such manner as we may direct, all such information as they may direct for the purpose of securing transparency in relation to such matters.

Consistency with EC Recommendations and the BEREC Common Positions

- 3.86 We have taken due account of the EC's Costing and Non-discrimination Recommendation in proposing to impose a no undue discrimination condition on Openreach in the WLA market.⁷⁰ There are three recommendations relating to the WLA market which are particularly relevant in respect of our proposal to apply a non-discrimination condition to network access:
- a) that where EOI is disproportionate, National Regulatory Authorities (NRAs) should ensure that the SMP operator provides wholesale inputs on at least an EOO⁷¹ basis;
 - b) that NRAs should ensure that when a non-discrimination obligation is imposed, access seekers can use the relevant systems and processes with the same degree of reliability and performance as the SMP operators' own downstream retail arm; and

⁷⁰ EC, 2013. [*Commission recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment \(C\(2013\) 5761\)*](#). (September 2013 EC Recommendation on non-discrimination obligations). [accessed 12 December 2019]

⁷¹ Equivalence of outputs, often referred to as no undue discrimination (NUD) – a less strict form of non-discrimination, i.e. more flexibility, certain discriminatory conduct possible. The dominant provider supplies all wholesale inputs to access seekers in a manner which is sufficiently comparable in terms of functionality and price to what the dominant provider supplies to its downstream divisions, but could be using different systems and processes.

- c) that NRAs should require SMP operators subject to a non-discrimination obligation to provide access seekers with regulated wholesale inputs, which allow the access seeker to effectively replicate technically new retail offers of the downstream retail arm of the SMP operator, in particular where EOI is not fully implemented.
- 3.87 As discussed previously, we propose to require Openreach to provide such inputs on an NUD basis in cases where EOI is disproportionate. In this we consider our approach is consistent with the EC’s recommendation to require SMP operator providers to provide access on “at least an EOO basis” as we interpret EOO to be comparable with NUD when applied as we propose.
- 3.88 Point 19 of that recommendation also provides that when imposing non-discrimination obligations, NRAs should impose KPIs in order to monitor effectively compliance with the non-discrimination obligation. We propose to impose a non-discrimination obligation and a power to impose KPIs in the physical infrastructure market. While we are not currently proposing KPIs relating to the PIA obligation, we will in due course consider what requirements (if any) it might be appropriate for Openreach to report as KPIs. We note that Openreach now voluntarily publishes a set of KPIs relating to network build on a quarterly basis.
- 3.89 We note that the Costing and Non-discrimination Recommendation also provides for the application of a technical replicability test, whether undertaken by the SMP operator and provided to the NRA or undertaken by the NRA itself, to ensure that access seekers can technically replicate new retail offers of the downstream business of the SMP operator.
- 3.90 Having taken utmost account of the Costing and Non-discrimination Recommendation in relation to technical replicability, we consider that the additional imposition of a technical replicability test in the context of this review is not appropriate or proportionate. We are satisfied that, where access seekers demand network access in the relevant fixed telecoms markets, the necessary provisions are in place to enable them to access regulated wholesale inputs that enable them to technically replicate BT’s downstream retail offers.
- 3.91 We have also taken utmost account of the BEREC Common Positions on wholesale leased lines⁷² and wholesale (physical) network infrastructure access⁷³ in formulating our proposals, including BP8/BP17, BP10/BP19 and BP10a/BP19a (respectively) which appear to us to be particularly relevant in this context.
- 3.92 In relation to achieving the objective of a level playing field, the BEREC Common Positions identify the following competition issues which arise frequently:
- “Alternative operators may not be able to compete on a level playing field which may result in SMP players:
- a) having an unfair advantage;

⁷² BEREC, BoR (12) 126

⁷³ BEREC, BoR (12) 127.

- b) having unmatchable advantage, by virtue of their economies of scale and scope, especially if derived from a position of incumbency;
- c) discriminating in favour of their own group business (or between its own wholesale customers), either on price or non-price issues;
- d) exhibiting obstructive and foot-dragging behaviour.”

3.93 We consider this issue to be sufficiently analogous to the competition concern that we have identified and have taken into account the best practices suggested in the Common Positions. In this respect, the BEREC Common Positions identify, amongst other things, as best practice that:

- a) NRAs should impose a general obligation of non-discrimination.
- b) NRAs should further clarify how the non-discrimination obligation is to be interpreted on a case-by-case basis.
- c) In cases where a general non-discrimination obligation proves not to be sufficient to the particular issues faced by the specific market and/or product, NRAs could attempt to clarify, as far as possible, how a non-discrimination remedy will be interpreted in practice, via identification of forms of behaviour which will be considered to be discriminatory. NRAs could implement such clarifications in various ways, for example either through explicit wording of the SMP obligation or via explanatory guidance which provides clarity as to the NRA’s interpretation of the obligation.
- d) NRAs should impose an obligation on SMP CPs requiring equivalence, and justify the exact form of it, in light of the competition problems they have identified.
- e) NRAs are best placed to determine the exact application of the form of equivalence on a product-by-product basis. For example, a strict application of EOI is most likely to be justified in those cases where the incremental design and implementation costs of imposing it are very low (because equivalence can be built into the design of new processes) and for certain key legacy services (where the benefits are very high compared to the material costs of retro-fitting EOI into existing business processes). In other cases, EOO would still be a sufficient and proportionate approach to ensure non-discrimination (e.g. when the wholesale product already shares most of the infrastructure and services with the product used by the downstream arm of the SMP operator).

3.94 We have further taken due account of the EC’s 2010 NGA recommendation which also related to the WLA market.⁷⁴ Point 13 of the recommendation provides that where duct capacity is available, NRAs should mandate access to civil engineering infrastructure and this access should be provided in accordance with the principle of equivalence as set out in Annex II. While we propose to interpret the non-discrimination obligation as requiring strict

⁷⁴ EC, October 2010. [*Commission Recommendation 25.9.2010 on regulated access to Next Generation Access Networks \(NGA\)*](#) (2010 EC Recommendation on NGA). [accessed 12 December 2019]

equivalence, differences are permitted where it can be demonstrated that strict equivalence is not justified. To the extent that this means that network access is provided on terms falling short of the principle of equivalence, we consider that this is justified by UK national circumstances for the reasons set out in this section.

Ensuring transparency

3.95 Requirements for transparency of charges, terms and conditions in markets in which one operator is dominant are complementary remedies to ensure that third-party providers can make effective use of the dominant operator's network access. We explain below our proposals to impose on Openreach requirements to:

- a) publish a Reference Offer;
- b) notify changes to charges, terms and conditions; and
- c) notify technical information.

Requirement to publish a reference offer

Our proposals

3.96 We propose that Openreach must publish a Reference Offer (RO) in relation to the provision of network access in each relevant fixed telecoms market. The RO must include terms and conditions for provisioning, technical information, Service Level Agreements (SLAs) and Service Level Guarantees (SLGs), and availability of co-location. We consider that this proposed requirement is appropriate and proportionate in relation to BT's market power in each of the relevant fixed telecoms markets.

Our reasoning

3.97 We consider that the requirement to publish a RO which we are proposing in each relevant fixed telecoms market is appropriate and proportionate.

3.98 A requirement to publish a RO has two main purposes:

- a) to assist transparency for the monitoring of potential anti-competitive behaviour; and
- b) to give visibility to the terms and conditions on which other providers will purchase wholesale services.

3.99 The RO helps ensure stability (in regard to investment and promoting market entry) in the relevant fixed telecoms markets, allowing for speedier negotiations, avoiding possible disputes and giving confidence to those purchasing wholesale services that they are being provided on non-discriminatory terms. Without this, market entry might be deterred to the detriment of long-term competition and hence consumers.

- 3.100 The proposed RO obligation specifies the information to be included in the RO and how the RO should be published. We consider that this comprises the minimum information necessary to achieve the purposes set out above.
- 3.101 We propose that the published RO must set out (as a minimum):
- a) a clear description of the services on offer, including technical characteristics and operational processes for service establishment, ordering and repair;
 - b) the locations of points of network access and the technical standards for network access;
 - c) conditions for access to ancillary and supplementary services associated with the network access, including operational support systems and databases, etc.;
 - d) contractual terms and conditions, including dispute resolution and contract negotiation/renegotiation arrangements;
 - e) charges, terms and payment procedures;
 - f) service level agreements and service level guarantees (see “SLAs and SLGs obligations” below); and
 - g) to the extent that Openreach uses the service in a different manner to other telecoms providers or uses similar services, Openreach is required to publish an Internal Reference Offer in relation to those services (see “Internal Reference Offer” below).
- 3.102 In sections 4, 5 and 6, we set out the RO requirements that specifically relate to the specific forms of network access (PIA, MPF, SLU, VULA, VULA 40/10, specific types of leased lines and specific types of dark fibre) we are proposing in the relevant fixed telecoms markets.

Internal Reference Offer

- 3.103 Where Openreach is supplying services to itself on a non-EOI basis (i.e. in cases of PIA and dark fibre), an Internal Reference Offer would allow us and stakeholders to identify any differences in the processes for internal use of network access compared to such use by third parties. We therefore propose that, to the extent that Openreach uses the services (set out in the ‘published RO must set out’ paragraph above) in a different manner to other telecoms providers or uses similar services, Openreach is required to publish an Internal Reference Offer in relation to those services. The Internal Reference Offer should at a minimum set out the same matters as set out in set out in the ‘published RO must set out’ paragraph above.

SLAs and SLGs obligations

- 3.104 In order to be effective, it is important that the contractual arrangements for the supply of network access products and services that telecoms providers buy from Openreach in the relevant fixed telecoms markets are such that:
- they incentivise the efficient provision of reliable services to Openreach’s wholesale customers;

- they set out fair and reasonable compensation payments for delays in delivery and repair of such services; and
- they allow Openreach and its wholesale customers to monitor effectively the performance of Openreach's provision and repair regulated wholesale services.

3.105 In order to achieve these objectives, contractual arrangements need to include:

- a set of SLAs which reflect the commercial SLAs provided to wholesale customers;
- a set of SLGs which set out fair and reasonable compensation for delays in the provision and repair of such services;
- a requirement that SLG payments are made on a proactive basis by Openreach; and
- specific service level commitments on the availability of the relevant operational support systems (by which telecoms providers make requests for service provision, transfers and fault repair as applicable).

3.106 We therefore propose to impose on Openreach a requirement to include in its contractual arrangements SLAs and SLGs as set out in the previous paragraph.

SLAs and SLGs negotiations

3.107 In the 2018 WLA and 2019 BCMR, we adopted contract negotiation principles, SLA/SLG assessment criteria and negotiating behaviours to be applied to future industry negotiations in relation to SLAs/SLGs facilitated by OTA2.

3.108 Where all parties have broadly similar negotiating strengths, commercial negotiation without the involvement of the industry regulator is the preferred method for reaching agreement on the terms of SLAs and SLGs. However, negotiations between Openreach and its customers are not likely to be balanced and we have concerns about the predictability and visibility of the process that determines critical aspects of SLA/SLG terms. While maintaining that regulatory intervention should be the last resort, we consider that there should be a defined, structured and open process for the negotiation of SLA/SLG terms which reserve a central role for the OTA2 and set a time limit for negotiations.

3.109 We therefore propose that the same principles, criteria and behaviours for negotiating SLAs and SLGs should continue to apply to future contract negotiations between Openreach and its customers in relation to the SLAs and SLGs for the provision of wholesale fixed telecoms products and services.⁷⁵ Where industry negotiations in relation to SLAs/SLGs do not result in an agreement, Openreach and its customers remain able to refer a dispute to Ofcom.

Other wholesale pricing structures

3.110 In Annex 15, we discuss our concerns around other wholesale commercial arrangements that Openreach might deploy that could deter alternative network rollout, such as loyalty inducing discounts. We recognise that such commercial arrangements may be beneficial. However, we are concerned that some could have the effect of deterring or undermining

⁷⁵ The principles for SLAs and SLGs negotiations are set out in Annex 22 of the 2019 BCMR.

alternative network rollout. We therefore propose to monitor any commercial arrangements proposed by Openreach. If Openreach were to introduce commercial arrangements which we considered posed a substantial threat to emerging competition without compensating benefits, we would expect to use our existing powers to intervene to prohibit any arrangements which we consider would deter alternative network rollout.

Conclusion

- 3.111 We consider that the proposed requirement in each relevant fixed telecoms market for Openreach to publish a Reference Offer is proportionate in that it is targeted at addressing the market power that we have provisionally found BT holds. We consider that the information that we are requiring to be published in the Reference Offer is the minimum that is necessary for providing transparency for monitoring potential anti-competitive behaviour and to give visibility on the terms and conditions of network access.
- 3.112 To give effect to the Reference Offer proposals we propose to set the draft SMP condition Condition 7 in Volume 5. Section 87(6)(c) of the Communications Act 2003 authorises the setting of SMP services conditions requiring the dominant provider to publish, in such a manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(d) also permits the setting of SMP services conditions requiring the dominant provider to include specified terms and conditions in the Reference Offer. Finally, section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the Reference Offer as may be directed from time to time.
- 3.113 In terms of implementation of these proposed Reference Offer requirements, for network access Openreach is providing as at the date the proposed condition enters into force, we propose to require Openreach to publish a Reference Offer on that same date. In most if not all cases, Openreach would already have a RO published for such network access. For any further network access provided after that date, Openreach would be required to update and publish the Reference Offer “as soon as reasonably practicable”. Therefore, the proposed condition permits a Reference Offer for further network access to be published at a later date, allowing for review, engagement and amendment.

Consistency with EC Recommendation and the BEREC Common Positions

- 3.114 The EC Recommendation provides that NRAs should require SMP operators to implement SLAs alongside KPIs, which should include SLGs in the case of a breach of the SLA. The EC Recommendation also indicates that payment of financial penalties should, in principle, be made automatic and be sufficiently dissuasive. These recommendations apply to the WLA market only. We have taken into account the EC Recommendation in relation to SLAs and SLGs.

3.115 We have also taken utmost account of the BEREC Common Positions on wholesale leased lines⁷⁶ and wholesale (physical) network infrastructure access⁷⁷, including BP16/BP26, BP22/BP32 and BP23/BP33 (respectively) which appear to us to be particularly relevant in this context.

3.116 In relation to the objective to assist transparency for the monitoring of potential anti-competitive behaviour; and giving visibility to the terms and conditions on which other providers will purchase wholesale services, the BEREC Common Positions identify, among other things, as best practice that:

“**BP16/BP26** NRAs should require SMP operators to provide clarity of terms and conditions of access (including those relating to relevant ancillary services) by publishing a Reference Offer (RO), the key elements of which should be specified or approved by the NRA. All material contractual terms and conditions which are known or knowable at the time of publication should be covered clearly.

BP16/BP26a NRAs should require SMP operators to take into account any reasonable views of wholesale customers in their RO, in particular regarding the evolution of the service offered.

BP16/BP26b NRAs should require SMP operators to publish the RO (i.e. make it operational) within a reasonable time after NRAs have imposed the obligation to grant access. NRAs should give guidance on the reasonable timeframe on a case by case basis.

BP16/BP26c NRAs should require SMP operators to update the RO as necessary, and in a timely manner (see BP22), to reflect relevant changes such as developments in line with market and technology evolution and/or changes to prices, terms and conditions for existing services or technical and operational characteristics. Where NRAs follow a pre-approval process, NRAs should further require SMP operators to inform them before publishing the necessary amendments to the RO.

BP16/BP26d Where applicable, NRAs should impose an obligation on SMP operators in relation to the minimum amount of information to be made available in the RO.

BP16/BP26e After lifting an obligation to apply a RO, NRAs should ensure that SMP operators provide provisions for the change in the contractual conditions which are in place on the basis of that RO for a transitional period to be determined accordingly.”

3.117 In relation to the objective of achieving reasonable quality of access products (operational aspects), the BEREC Common Positions identify, among other things, as best practice that:

“**BP22/BP32** NRAs should require SMP operators to provide a reasonable defined level of service.

⁷⁶ BEREC, BoR (12) 126

⁷⁷ BEREC, BoR (12) 127.

BP22/BP32a Service Level Agreements (SLAs) should cover specific service areas. Services areas when SLAs are most likely to be necessary are ordering, delivery, service (availability) and maintenance (repair).

BP22/BP32b SLAs should be made available to wholesale operators. To ensure maximum transparency and comparability of the terms provided by SMP operators to alternative operators and their downstream arm, all SLAs could be made available to all relevant wholesale customers (including those from outside a specific Member State). For example, SMP operators could make them available on demand or automatically publish these on their website (as part of their RO).

BP22/BP32c NRAs should take oversight for the process of setting SLAs. NRAs should determine the level of their involvement in this process by taking into account specific market circumstances and particular concerns for discriminatory behaviour.

BP23/BP33 NRAs should impose a generic requirement on SMP operators to provide Service Level Guarantees (SLGs).

BP23/BP33a SLGs should cover all necessary specific service areas. Service areas where SLGs are most likely to be necessary are ordering, delivery, service (availability) and maintenance (repair).

BP23/BP33b SLG payments should be made without undue delay and should be proactive in nature. That is, with a pre-established process for the payment and billing of the SLGs among operators and without the need for alternative operators to request the intervention of any third party i.e. NRAs or courts.

BP23/BP33c NRAs should take oversight for the process of setting SLGs. NRAs should determine the level of their involvement in this process by taking into account specific market circumstances and particular concerns for discriminatory behaviour.”

3.118 We consider that our proposals are broadly consistent with the best practice set out in the BEREC Common Positions.

Requirement to notify changes to charges, terms and conditions

Our proposals

- 3.119 We propose to make Openreach subject to an obligation to notify, in writing (known as an Access Change Notice, or ACN) changes to its charges, terms and conditions for network access products and services in each of the relevant fixed telecoms markets. We consider that this proposed requirement is appropriate and proportionate in relation to BT’s market power in each of the relevant fixed telecoms markets.
- 3.120 Regarding the notice period required for Openreach to inform its customers of changes, we propose that the period should be:
- a) 90 days for prices, terms and conditions relating to existing services in the relevant fixed telecoms markets;

- b) 28 days for prices, terms and conditions relating to new service introductions;
 - c) 28 days for price reductions and associated conditions (for example, conditions applied to Special Offers) and the end of temporary price reductions; and
 - d) 90 days for any new or existing product where the price or other contractual conditions are conditional on the volume and/or range of services purchased.
- 3.121 In view of our proposed approach to copper retirement, we propose to require Openreach to inform its customers and Ofcom when an exchange area has reached 75% coverage of ultrafast broadband and when an exchange area has been completed. We also propose to require Openreach to give its customers and Ofcom a 12-month advance notice before reaching any of these two thresholds in an exchange area. We explain these proposals in more detail in Section 2.

Our reasoning

- 3.122 We consider that the requirement to notify charges, terms and conditions which we are proposing in each market is appropriate and proportionate.
- 3.123 Notification of changes to charges at the wholesale level has the joint purpose of improving transparency for monitoring possible anti-competitive behaviour and giving advance warning of price changes to competing providers who purchase wholesale access services. The latter purpose ensures that competing providers have sufficient time to plan for such changes, as they may want to restructure the prices of their downstream offerings in response to charge changes at the wholesale level. Notifying changes therefore helps to ensure stability in markets.
- 3.124 While price notification may have a ‘chilling’ effect (where other telecoms providers follow Openreach’s prices rather than set prices of their own accord), the relevant fixed telecoms markets are characterised by a high level of reliance by downstream telecoms providers on Openreach’s wholesale services. Therefore, we believe it is appropriate for Openreach to be subject to an obligation to notify changes to its charges for wholesale network access services in order to provide the transparency, time to plan for changes and stability needed to facilitate investment and entry.
- 3.125 We also consider it appropriate to propose that Openreach notifies changes to terms and conditions in order to ensure transparency and provide advance warning of changes to allow competing providers sufficient time to plan for them. For the same reasons as outlined above, we consider that notifying changes to terms and conditions will lead to greater market stability, without which incentives to invest might be undermined and market entry made more difficult.
- 3.126 Regarding the content of the ACN, we propose that it includes:
- a) a description of the network access in question;
 - b) a reference as to where the terms and conditions associated with the network access in question can be found in Openreach’s Reference Offer;

- c) the current and proposed new charge and/or current and proposed new terms and conditions (as the case may be); and
- d) the date on which, or the period for which, the changes in the ACN will take effect (the “effective date”).

Changes to prices

- 3.127 Changes to prices, terms and conditions for the provision of wholesale inputs in fixed telecoms markets could have material impacts on consumers. Thus, we propose to impose a requirement on Openreach to give advance notice of price changes.
- 3.128 In regard to the timings of the notification, the notification period should allow sufficient time for downstream providers to make necessary changes to their downstream products and services. We consider that except for the special cases discussed below, Openreach should give 90 days’ notice for changes to prices.
- 3.129 In the case where prices are being reduced, we recognise that industry and customers benefit from shorter notification periods. For example, there may be advantages in having a shorter notification period for price reductions that could encourage migration to newer or more efficient services. We therefore propose that 28 days is an appropriate notification period for price reductions for products and services in the relevant fixed telecoms markets.
- 3.130 Where Openreach is providing a Special Offer, customers benefit from a shorter notification period to enable them to react faster to the Special Offer, and maintain flexibility to try new services and transition over to the newly priced service, which will benefit consumers through new services and greater availability of choice. We therefore propose that 28 days is an appropriate notification period for Special Offers. We discuss extensions and amendments to Special Offers below.
- 3.131 Where Openreach introduces a new product or service in the relevant fixed telecoms markets, we consider that the prior notification period should reflect the lesser need for advance notice, since there will not be existing customers for whom wholesale price changes might require revisions to their own pricing or other commercial decisions, and the existing service(s) provide the core set of input services for downstream telecoms providers, and are protected by the longer notification period. We therefore propose that 28 days is an appropriate notification period for new products and services.
- 3.132 Notwithstanding the discussion above, as explained in Annex 15, we are concerned that in the WLA and LL Access markets some loyalty-inducing commercial terms could undermine or deter alternative network rollout. To facilitate the monitoring of these commercial terms, we are proposing a requirement in these markets for Openreach to notify contract/pricing changes 90 days in advance specifically for pricing structures where the price or other contractual conditions are conditional on the volume and/or range of services purchased.

Changes to non-prices terms and conditions

- 3.133 We consider that 90 days is an appropriate notification period for existing and new products and services in the relevant fixed telecoms markets and so are proposing an obligation that, in general, at least 90 days’ notification should be given.
- 3.134 We do not consider that, where Openreach plans service development and service launches, the proposed requirement to notify changes to terms and conditions would be problematic, as we believe there is sufficient time in the development cycle of a new service to inform its customers of changes to the terms and conditions.

Extensions and amendments to Special Offers

- 3.135 A 90-day notification period has a potentially negative impact on Openreach’s ability to amend Special Offer non-price terms and conditions, due to the misalignment of 28 days’ notice for launching a Special Offer and/or changing prices, compared to 90 days’ notice to change the terms and conditions of the Special Offer. This has the potential to make it difficult for Openreach to launch Special Offers or to amend Special Offers in their lifetimes, even when it might be beneficial to customers to do so. Therefore, we propose to require Openreach to provide only 28 days’ notice where it plans to amend the terms and conditions of a Special Offer.
- 3.136 We also propose to allow Openreach, where it has notified its customers of the price that will apply at the end of the Special Offer, to extend the Special Offer. Where the extension is at the current Special Offer price or below, Openreach must provide one working day’s notice. Where Openreach extends the offer at another price that is below the one originally notified as the price to apply when the original Special Offer ended, we propose a 28 days’ notice. We have outlined the proposed notification periods that will apply for where Special Offers are extended or amended in Table 3.3.

Table 3.3: Proposed notification periods on Openreach for amending or extending Special Offers

Amendment to Special Offer	Amendment concerns	Notification period
If Openreach wants to extend a Special Offer on current T&C at the current Special Offer price or lower price	Prices	Next working day
If Openreach wants to extend a Special Offer on current T&Cs at a price above the initial Special Offer price but below the standard price	Prices	28 days

Amendment to Special Offer	Amendment concerns	Notification period
If Openreach wants to extend a special offer on updated T&Cs or amend T&Cs of existing Special Offer, irrespective of price	T&Cs	28 days

Requirement to notify Ofcom of changes to charges, terms and conditions in relation to Openreach’s internal consumption of services in the relevant fixed telecoms markets

- 3.137 For each relevant fixed telecoms market, we propose to require Openreach to notify us of changes to charges, terms and conditions in relation to its internal consumption of any services in the relevant fixed telecoms markets.
- 3.138 In relation to the physical infrastructure market, while Openreach does not consume PIA, we are proposing a requirement on Openreach to produce an Internal Reference Offer that sets out its internal processes. In order to ensure transparency, we propose to require Openreach to notify us where these internal processes change.

Notifications in relation to copper retirement

- 3.139 Our proposed approach to copper retirement means that, in a given exchange area where Openreach has reached 75% coverage of ultrafast broadband services or where it has completed the deployment of such services, our regulation will be relaxed such that Openreach can change certain charges, terms and/or conditions for its services. To ensure transparency for monitoring possible anti-competitive behaviour and that competing providers have advance warning of changes to prices, terms and conditions in relation to the wholesale access services they purchase, we propose to require Openreach to make four additional public notifications for its customers and to Ofcom:
- a 12-month advance notice before an exchange area is expected to reach 75% coverage of ultrafast broadband;
 - a 12-month advance notice before an exchange area is expected to be “completed”;
 - a notice that an exchange area has reached 75% coverage of ultrafast broadband; and
 - a notice that an exchange area has been completed.

Conclusion

- 3.140 We consider that the proposed requirement to notify charges, terms and conditions is proportionate in that it only requires that information that other telecoms providers would need to know (in order to adjust for any changes) would have to be notified and that the proposed notification periods are the minimum required to allow changes to be reflected in downstream offers.

3.141 To implement these proposals, we propose to set the draft SMP Condition 8 in Volume 5. Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency.

Consistency with EC Recommendation and the BEREC Common Position

3.142 We consider that the proposed condition is consistent with the BEREC Common Position on wholesale (physical) network infrastructure access⁷⁸, including the remedies falling under objectives BP16 and BP17. This BEREC Common Position relates to the WLA market only.

Requirement to notify technical information

Our proposals

3.143 We propose to require Openreach to publish, in advance, changes to technical information in each relevant fixed telecoms market. We think Openreach should notify its customers of changes to technical information not less than 90 days in advance of providing new services or amending existing technical terms and conditions. We consider that this proposed requirement is appropriate and proportionate in relation to BT's market power in each of the relevant fixed telecoms markets.

Our reasoning

3.144 We consider that the requirement to notify technical information which we are proposing in each market is appropriate and proportionate.

3.145 The aim of this regulation is to provide advance notification of changes to technical characteristics to ensure that competing providers have sufficient time to respond to changes that may affect them. For example, a competing provider may need to introduce new equipment or modify existing equipment or systems to support a new or changed technical interface. Similarly, a competing provider may need to make changes to its network in order to support changes in the points of network access or configuration.

3.146 This remedy is important in the fixed telecoms markets to ensure that providers who compete in downstream markets are able to make effective use of existing or, where applicable, new wholesale services provided by Openreach. The technical information required by other providers includes:

- new or amended technical characteristics, including information on network configuration (e.g. information about the function and connectivity of points of access, such as the connectivity of exchanges to customers and other exchanges), locations of the points of network access, and technical standards (including any usage restrictions and other security issues);

⁷⁸ BEREC, BoR (12) 127

- the information provided currently in the Network Information Publication Principles (NIPP) and Access Network Facilities (ANF) agreement; and
- any other additional information necessary to make use of the services provided in the relevant fixed telecoms markets.

3.147 We believe that 90 days is the minimum time that competing providers would need to make modifications to their network to support changes.

3.148 The one exception to this is in relation to amendments to technical specifications that are developed and agreed through NICC Standards Limited.⁷⁹ NICC is a technical forum for the UK communications sector that develops interoperability standards for public communications networks and services in the UK. NICC specifications are developed by subject matter experts from Openreach and other telecoms providers and are adopted only with the approval of NICC members. In view of these arrangements, we do not consider it necessary to propose a 90-day notice period where Openreach proposes to adopt an amended NICC specification, as telecoms providers are likely to already be aware of NICC specifications due to their participation in the forum (and will therefore be satisfied that they have been agreed by industry, and not imposed by Openreach unilaterally). We do, however, consider that Openreach should provide notification of changes based on the NICC standard. This is to ensure that published technical information is up to date, as without an obligation to notify changes based on NICC standards, service descriptions for various wholesale services could be out of date or incomplete. Our proposed SMP condition reflects this position.

Conclusion

3.149 We consider that the proposed requirement to notify technical information is proportionate in that it only requires information that other telecoms providers would need to know and that the proposed notification periods are the minimum required to allow changes to be reflected in downstream offers.

3.150 To give effect to these proposals we propose to set the draft SMP Condition 9 at Volume 5. As set out above section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency.

Consistency with the BEREC Common Positions

3.151 We consider that the proposed condition is consistent with the BEREC Common Positions on wholesale leased lines⁸⁰ and wholesale (physical) network infrastructure access⁸¹, including the remedies falling under objectives BP18/BP29 and BP19/BP30 (respectively).

⁷⁹ NICC. [Developing interoperability standards for the UK](#). [accessed 12 December 2019]

⁸⁰ BEREC, BoR (12) 126

⁸¹ BEREC, BoR (12) 127.

Requirement for quality of service

- 3.152 We propose to impose on Openreach an SMP condition that allows us to set directions specifying quality of service (QoS) standards and reporting requirements in relation to Openreach's QoS performance for services in all relevant fixed telecoms markets. Our detailed proposals and reasoning on QoS requirements are set out in Section 7.

Regulatory Financial Reporting

- 3.153 We are currently considering whether regulatory financial reporting obligations (in the form of accounting separation and cost accounting remedies) are appropriate in the relevant fixed telecoms markets in the UK and, to the extent that they are, what detailed requirements are appropriate in light of our market analysis. We will set out our proposals in a forthcoming consultation on regulatory financial reporting.

Consultation question(s)

Question 3.1: Do you agree with our proposed general remedies? Please set out your reasons and supporting evidence for your response.

4. Specific remedies: physical infrastructure market

4.1 In this section, we set out our proposed specific network access remedy associated with physical infrastructure (PIA) and the supporting obligations that we have decided to impose on Openreach. This proposed requirement is pursuant to and supplements the general network access obligation imposed in the market for wholesale access to physical infrastructure ('Physical Infrastructure market') for deploying a telecoms network in the UK (outside the Hull Area) as set out in Section 3.

Table 4.1: Summary of specific remedies

Specific remedies
Specific access obligation to provide Physical Infrastructure Access (PIA), including network adjustments
Specific requirement to provide PIA ancillary services
Specific requirements for the publication of a Reference Offer

Addressing the competition concerns

4.2 In Section 5 of Volume 2, we set out our market assessment and provisionally identified that BT has SMP in the supply of access to physical infrastructure suitable for telecoms networks.

4.3 For the reasons set out below, we are proposing to re-impose an access requirement which in effect opens ducts and poles to all telecoms operators without reference to specific downstream services. This approach was first imposed in 2019 to provide greater flexibility, better reflecting the needs of operators investing in fibre networks to build up their investment through the provision of a range of services.

Specific access obligation to provide PIA

Current regulations

4.4 In 2019 we imposed a specific network access remedy in the form of PIA in each of the Physical Infrastructure markets which requires BT to allow other telecoms providers access to deploy their own networks in BT's underground ducts and chambers or overhead on its telegraph poles. This PIA product had no usage or geographic scope restrictions.

Our proposals

4.5 We propose to re-impose a specific network access remedy in the form of PIA in our proposed Physical Infrastructure market. We consider that:

- a) a specific network access requirement is necessary to address BT's SMP in the Physical Infrastructure market;
 - b) imposing usage or geographic scope restrictions on PIA would risk undermining the effectiveness of the remedy; and
 - c) any adverse impacts of PIA are proportionate to our overall aim.
- 4.6 We also propose to impose a charge control on PIA. This is to prevent excessive pricing and allow BT to recover its costs. We consider that a charge control provides certainty to rival network builders over the level of charges and support an effective PIA remedy. Consistent with our approach in the 2019 PIMR, we propose to impose a charge control on duct, pole and footway box rentals. Details on the charge control are set out in Volume 4.
- 4.7 We maintain the view that PIA is appropriate and proportionate in relation to BT's market power in the proposed Physical Infrastructure market. We set out our reasoning below.

A specific network access remedy is necessary to address BT's SMP in the Physical Infrastructure market

- 4.8 Given our conclusion that BT has SMP in the proposed Physical Infrastructure market, we consider it likely that BT would have the incentive and ability to favour its own downstream businesses over rivals in the relevant downstream markets, distorting competition in these markets, which is ultimately against the interests of consumers. BT could refuse access to its physical infrastructure, or it could provide access to its physical infrastructure on less favourable terms and conditions compared to those obtained by its own downstream businesses.
- 4.9 Although the general network access remedy (Section 3), which we propose in our prospective Physical Infrastructure market, is aimed at addressing this competition problem, establishing a request for access under this provision is likely to require complex industry negotiations about the specific terms of the requested network access. This would risk uncertainty and delay, undermining the effectiveness of our regulation.
- 4.10 As explained in Section 5 of Volume 2 and discussed above, our provisional view is that BT's SMP in the Physical Infrastructure market is entrenched and enduring, leading to a significant competitive imbalance between BT and alternative telecoms providers. Therefore, more rapid developments in the market are needed than can be achieved by the general network access remedy alone. On that basis, we consider that it is necessary for us to require BT to continue to provide a specific form of network access. This approach means that telecoms providers will have certainty as to the basis on which they may have access to BT's physical infrastructure, while retaining the option of being able to request an alternative variant of network access under the general obligation where appropriate.
- 4.11 The continued availability of a specified network access remedy in the form of PIA directly addresses the identified competition problems by requiring BT to provide access to its physical infrastructure on regulated terms and overcomes any industry inertia that might be associated with the development of a new remedy. Maintaining PIA ensures that the

network access requirement we are imposing is an effective remedy which we anticipate will:

- a) lower the cost of deploying fibre networks and make alternative network build more likely; and
- b) facilitate greater competition higher up the supply chain, allowing telecoms providers to create their own active services and exposing active components to competition.

4.12 When considering the form of our network access obligation, our starting point is to consider imposing a network access obligation without any restrictions on usage or geographic scope. In most instances where we impose network access obligations, such restrictions are unnecessary as the obligations are typically not expected to result in effects on products in other markets. In addition, restrictions present a risk of regulatory failure as they may limit a telecoms providers' flexibility to use the remedy in ways not foreseen by the regulator but nevertheless consistent with the intended purpose of the remedy, which may reduce the effectiveness of the remedy. Therefore, in most cases, imposing an unrestricted network access obligation is both appropriate and proportionate. For example, the current LLU and VULA obligations and those that we are proposing in this review have no such usage restrictions.⁸²

4.13 However, to a greater extent than other forms of network access, an PIA obligation can be used as an upstream input into several downstream products; a PIA remedy without usage or geographic scope restrictions can be used in the deployment of any service in any location and some of these uses and locations will impact on downstream markets. In particular, there might be a risk that an PIA remedy may impact competition in downstream markets that are already competitive, stifle dynamic and allocative efficiency, increase the cost of competition and Openreach's costs and resource requirements, and cause some unintended effects related to network adjustments. We have therefore considered:

- a) the impact of any usage or geographic scope restrictions on the effectiveness of PIA in the Physical Infrastructure market; and
- b) the potential impact of PIA on downstream markets.

Imposing restrictions on the use of PIA would risk undermining its effectiveness

4.14 As explained above, we have decided to require Openreach to provide PIA to address BT's incentive and ability to refuse or impede access to its physical infrastructure which arises out of its SMP in that infrastructure. In doing so, our aim is to facilitate third party network build using BT's infrastructure nationally which in turn will promote competition in downstream services. We consider that imposing usage or geographic scope restrictions on PIA risks undermining the effectiveness of PIA in achieving this aim.

⁸² Local loop unbundling (LLU) enables telecoms providers to take control of BT's physical telephone lines so that they can provide services direct to end customers. Virtual Unbundled Local Access (VULA) is used to deliver superfast broadband over BT's FTTC network.

- 4.15 Usage restrictions would undermine the effectiveness of PIA. Limiting technological flexibility and/or limiting the scope of the PIA remedy is likely to materially increase the risk that a telecoms provider takes the view that it is not viable to invest in the first place. For example, a fibre network is costly to build, but once deployed has almost limitless capacity. The commercial business case for the initial investment therefore typically relies on using this capacity to generate as many different revenue streams as possible, through a wide range of different services. Information received from stakeholders as part of the 2018 WLA market review and in response to the 2018 PIMR Consultation supports this and suggests that any usage restrictions reduce the viability of their business cases, limiting the extent that investments could be justified.⁸³
- 4.16 We also consider restricting the flexibility of network builders to provide downstream services on either a service or geographic basis will impede their ability to compete downstream. To allow for effective network competition, network builders require flexibility at least equivalent to that of BT. BT is able to use any part of its physical infrastructure without any restrictions to deploy telecoms networks for any purpose and in any location. For example, by deploying fibre cables that will be used to serve both residential and business customers, BT is able to leverage the cost savings and potential revenue benefits of both markets, while using the most cost-effective routes in its physical infrastructure. We therefore, believe that for downstream competition to become effective, the same flexibility and the same opportunity for efficiency gains needs to be available to all access seekers.
- 4.17 Another possible approach would be to impose targeted usage or geographic scope restrictions to prevent the use of PIA in respect of downstream markets that are already competitive. However, we consider that such an approach would still undermine network investment for the reasons set out above and be unworkable in practice. We set out below two examples of targeted restrictions and explain why these are inappropriate.
- 4.18 In Section 8 of Volume 2, of this consultation, we proposed the Leased Line access market in the Central London Area (CLA)⁸⁴ to be competitive. We remain of the view that a restriction which prevents the use of PIA for leased lines in this geographic area will render the remedy ineffective:
- a) First, a restriction on the use of PIA for leased lines in the CLA would reduce the incentives for investment for access seekers deploying telecoms networks at large-scale, as access seekers could potentially face higher costs (through needing longer routes to connect BTs physical infrastructure with that of other telecoms providers in the CLA), less flexibility (to allow them to change the reason why they are using PIA) and a possible

⁸³ We set out in more detail the importance of technological flexibility to meet future demand and economies of scope in paragraphs 2.115-2.140 of Volume 3, 2018 WLA Statement. See also CityFibre's response to the 2018 PIMR Consultation, paragraphs 7.1.1-7.1.2; IIG's response to the 2018 PIMR, 2018 BCMR and 2018 BT RFR Consultations, paragraphs 14.1.1-14.1.3; TalkTalk's response to the 2018 PIMR Consultation, paragraph 5.15; Virgin Media's response to the 2018 PIMR Consultation, page 22; []

⁸⁴ The CLA broadly corresponds to the Central Activities Zone defined by the Greater London Authority as London's business centre. See: https://www.london.gov.uk/sites/default/files/caz_spg_final_v4.pdf. [accessed 12 December 2019]

barrier to entry (as BT would have to confirm the acceptability of an access request based on the services that will be offered).

- b) Second, defining access with reference to service type, inherently works against innovation as it restricts requests to access for currently recognised services. This would reduce the incentives for deployment of contemporary telecoms networks where the delineation between broadband and leased line services continues to lose its relevancy.

4.19 In Section 8 of Volume 2, we also provisionally find that BT has no SMP in the provision of leased lines on certain Inter-Exchange Connectivity routes. Excluding the use of certain Inter-Exchange Connectivity routes for leased lines purposes⁸⁵ from the scope of the PIA remedy would impose restrictions on the type of networks access seekers can deploy, both in term of the services they carry and their architecture. While ducts may serve inter-exchange BT routes they may be equally valuable to access seekers wishing to deploy multiservice networks and/or novel network designs. Restrictions of this nature will therefore increase the cost of alternative network deployment, while allowing BT to retain the flexible use of such duct reinforcing their SMP position.

4.20 We therefore consider that imposing any restrictions on the PIA remedy will render it ineffective.

Any adverse impacts of PIA are proportionate to our overall aim

4.21 Given our view that the effectiveness of the PIA remedy would be undermined by imposing usage or geographic scope restrictions, we have considered the potential impact of our approach on downstream markets to assess whether there are any adverse effects arising which are disproportionate to our overall aim.

4.22 We propose that in this review period any adverse effects arising are not disproportionate to our overall aim for the following reasons.

Impact on dynamic efficiency

4.23 In relation to telecoms providers other than BT, we expect an effective PIA remedy to reduce the absolute costs and time required to build ultrafast broadband networks at scale which will encourage competitors to invest in their own networks. To the extent our remedy displaces some end-to-end competition, this is likely to be outweighed by the significant benefits of realising network competition based on PIA in potentially many more geographic areas.

4.24 In relation to BT, we expect that competition, or threat of competition, under our PIA remedy, will encourage BT to invest in their own networks. With regard to the impact on BT's cost recovery, specifically in the leased lines market, whilst Openreach may experience a reduced market share in leased lines services as a result of our PIA remedy, we also expect

⁸⁵ Inter-Exchange routes are an artefact of BT network topology. PSTN networks use twisted-pair copper telephone lines to transmit voice calls. The signal attenuation of copper lines limits their effective range to about 4.5km. This has restricted the length and location of BT's duct and pole infrastructure and the size, location and number of BT's local exchanges. By contrast, contemporary telecoms networks using fibre technologies can support an operating range of about 70km.

that the pace of the changing competitive landscape would allow Openreach sufficient time to readjust its capital investment, and therefore minimise unrecoverable investments. Moreover, BT has headroom under our proposed charge controls on leased lines in areas with potential rival network build, and therefore we expect BT will still be able to recover its costs.

Impact on BT's pricing structure

4.25 We have considered the possibility that the widespread use of the PIA remedy could result in BT having to change its pricing structure, with potential implications for allocative efficiency. However, taking regulatory measures in order to encourage relatively efficient pricing in circumstances where competition is absent does not imply that it is desirable to restrict (or avoid promoting) competition simply in order to preserve Openreach's ability to set prices flexibly. Although more competition would mean Openreach will have less control over pricing, that is a natural and desirable constituent of a more competitive market.

Impact on cost of competition

4.26 PIA-based competition entails some duplication of fixed costs, such as fibre and active network elements, which could put upward pressure on industry average costs. However, in the long-term we expect new technologies to be required which will likely involve some element of duplication of the existing copper network and new networks, whether or not PIA is utilised for deployment of new technologies. By removing the need to dig, PIA minimises the duplication of fixed costs when competitors roll out networks.

Impact on competitive markets

4.27 We have considered the potential impact of PIA on deregulated services and areas that are already competitive. Our view is that the impact of PIA on competitive markets, such as the business connectivity market in the CLA and the Inter-Exchange Connectivity market, will not render the remedy disproportionate.

Externalities caused by our approach to network adjustment costs⁸⁶

4.28 Any requests for network adjustments will only arise where other telecoms providers are using PIA to deploy competing networks. Therefore, the scale of any impacts is contingent on the scale of network deployment, and so is directly linked to the scale of the benefits that result from imposing the PIA remedy. As a result, we consider that any adverse impacts are likely to be justified by significant benefits to consumers in the longer term from greater network competition.

4.29 Therefore, in view of the analysis above, we consider the PIA remedy is proportionate. For the reasons set out above and in the discussion of network adjustments below, we consider that our decisions go no further than is necessary to address BT's SMP in the Physical Infrastructure markets.

⁸⁶ Network adjustments are changes to the physical infrastructure that Openreach is required to make it available to other telecoms providers, and network adjustment costs are the costs that Openreach incurs to make these changes. For example, this might include repairing a collapsed duct to make it useable.

Concerns on capacity

- 4.30 We accept that in future parts of BT's physical infrastructure will reach its maximum capacity due to deployment of rival networks, though the extent to which the points of congestion have a material impact on overall network deployment is not clear. Consumption of the physical infrastructure is a desired outcome of our regulation and a step towards achieving our strategic goal of network competition.
- 4.31 Therefore, we do not think it is appropriate, at this time, to impose additional rules to mitigate capacity issues, such as the reciprocal use of physical infrastructure amongst all telecoms providers or any usage or geographic scope restrictions on the PIA remedy.

Network adjustments

Current regulations

- 4.32 The PIA obligation imposed in the 2019 PIMR Statement includes a requirement on BT to make adjustments to its physical infrastructure network in certain specific circumstances.

Our proposals

- 4.33 We consider that our proposed PIA obligation should continue to require BT to make adjustments to its physical infrastructure network in the circumstances explained below. We note there has previously been broad agreement with our proposals.⁸⁷

Openreach should be required to make adjustments to its infrastructure where it is unusable

- 4.34 Telecoms providers using PIA to deploy a competing network will encounter sections of infrastructure which they cannot use, either because the existing infrastructure is faulty or because there is insufficient capacity in that section. For the reasons set out below, our view is that the remedy will be ineffective unless Openreach is required to adjust the physical infrastructure network to make it available for use in certain circumstances.
- 4.35 Our reason for requiring BT to provide network access in the form of PIA is to promote competition by facilitating third-party investment in competing networks. We consider that the efficiencies arising out of deploying a network using PIA, instead of building a new physical infrastructure network, will facilitate investment which would not otherwise be viable. In particular, rival telecoms providers avoid the costs and time associated with duplicating the physical infrastructure network, and instead only pay a share of the costs of

⁸⁷ Digital Colony's response to the 2018 PIMR Consultation, page 3; IIG's response to the 2018 PIMR, 2018 BCMR and 2018 BT RFR Consultations, paragraphs 14.2.4; SSE's response to the 2018 PIMR Consultation, page 3; TalkTalk's response to the 2018 PIMR Consultation, paragraph 5.6; UKCTA's response to the 2018 PIMR Consultation; page 2; Virgin Media's response to the 2018 PIMR Consultation, pages 26-27 and 31; Vodafone's response to the 2018 PIMR Consultation, paragraph 6.23;

[X]

the existing physical infrastructure. Our objective in imposing PIA is to unlock these efficiencies to the greatest extent possible to help facilitate such investment.

- 4.36 When a telecoms provider encounters an unusable section of BT's physical infrastructure it will be necessary to overcome this.⁸⁸ One approach would be for telecoms providers to install their own ducts or poles alongside BT's to circumvent the unusable section in BT's infrastructure. Another approach would be for Openreach to adjust the existing physical infrastructure to remedy the unusable section, for example, by repairing the faulty infrastructure or installing additional capacity where the existing capacity is full.
- 4.37 Given the range of options available to Openreach to overcome unusable sections of infrastructure, it will sometimes be more efficient (i.e. quicker, easier and/or cheaper) for Openreach to adjust the existing physical infrastructure than for a telecoms provider to install their own infrastructure alongside BT's. For example, it may cost less for Openreach to repair faulty infrastructure than for a telecoms provider to build new, parallel infrastructure.
- 4.38 Without a requirement on Openreach to adjust the existing physical infrastructure in these cases, telecoms providers deploying rival networks would need to incur additional cost and/or delay building their own infrastructure to overcome unusable sections of BT's physical infrastructure. The deployment of rival networks will therefore entail unnecessary duplication of the physical infrastructure network, and the benefits from sharing BT's existing physical infrastructure will not be fully realised. Ultimately, this will reduce the scope for competitive network investment, and in general the remedy will be less effective.
- 4.39 Moreover, requiring telecoms providers to install their own infrastructure to bypass the unusable sections would not ensure a level playing field with Openreach in those cases where it can overcome unusable sections of infrastructure at lower cost in any competing network deployment of its own (for example, an FTTP deployment). Knowing that Openreach has this competitive advantage could undermine incentives to invest in rival networks in the first place, rendering the PIA remedy ineffective as a basis for scale rollout of competing networks.
- 4.40 Therefore, we are proposing that the PIA access obligation should extend to requiring Openreach to make adjustments to its network where this is necessary for its physical infrastructure to be available to telecoms providers for the purpose of deploying their own networks. This will promote network competition by realising greater efficiency benefits from sharing BT's existing physical infrastructure and ensuring a level playing field with Openreach. Without such a requirement, the benefits resulting from other telecoms providers deploying ultrafast networks at scale are unlikely to be realised in full.
- 4.41 For the avoidance of doubt, we are clarifying that the requirement to make network adjustments applies irrespective of whether a telecoms provider is using the infrastructure

⁸⁸ With respect to the WLA market, in paragraph 4.25 of the April 2017 DPA Consultation, we set out examples of where unusable sections of infrastructure will be encountered, based on BT's own surveys of its physical infrastructure commissioned in 2008 and 2009, as well as more recent surveys carried out by other telecoms providers with a view to using the physical infrastructure access obligation in the WLA market. We set out a number of examples in more detail in Section 2, Volume 3 of the 2018 WLA Statement, and evidence as to their incidence in Annex 26 of the 2018 WLA Statement.

for the first time (e.g. installing its first sub-duct), or a subsequent time (e.g. installing a second sub-duct to increase capacity in its network). For example, a telecoms provider attempting to install a second sub-duct may find that the duct has collapsed since installing the first sub-duct. The obligation to make the physical infrastructure usable still applies in these circumstances.

The requirement to make adjustments is limited

- 4.42 We have considered the approach we should take to specifying the extent of the obligation on Openreach to make adjustments to its network. In our view, specifying the precise extent of this obligation in the SMP condition carries a risk of regulatory failure given that what is necessary is likely to depend on the specific circumstances of any case. Given the risk of regulatory failure, we do not believe it is appropriate to set prescriptive rules about which types of adjustments are included in the obligation. We are therefore proposing to supplement the general and specific network access requirements with largely the same guidance as we previously issued on where this obligation would apply.⁸⁹
- 4.43 We consider that the package of measures we are proposing, including the three criteria and the guidance we provide in Annex 12 on their application, will ensure that Openreach has sufficient scope to implement any appropriate financial and budgetary controls and authority over any costs incurred (per job and in total). The application of these criteria and guidance will determine whether a network adjustment request is valid and, therefore, which network adjustments requests Openreach will have to accept and/or how it should recover its costs as set out in Volume 4.

Specific requirement to provide PIA ancillary services

Current regulation

- 4.44 BT are required to provide PIA ancillary services as may be reasonably necessary for the use of PIA, including as a minimum: power, PIA Co-Location, PIA Co-Mingling (the provision of space and the ability to house equipment in a BT telephone exchange or equivalent), PIA Site Access (access to equipment that the telecoms provider has in a BT telephone exchange or equivalent) and PIA Database Access.

Our proposals

- 4.45 We continue to believe that it is appropriate and proportionate to require BT to provide PIA ancillary services. A requirement to offer access to ancillary services has the purpose of assisting in promoting competition in downstream markets. We consider that such ancillary

⁸⁹ We have proposed clarifications in relation to re-cabling activities and network adjustments required subsequent to the initial order.

services are necessary to support the provision and use of PIA.⁹⁰ In this regard, we note stakeholders have previously been supportive of this remedy.⁹¹

4.46 We therefore propose that our specific access remedy should require BT to provide these ancillary services, including as a minimum, space and power, site access, database access, and any other supporting services used for installation, maintenance, modification, and ceasing of this specific PIA service.

Conclusion

4.47 For the reasons set out above, we consider that our proposed PIA requirement (which includes network adjustments and other ancillary services) is proportionate.

4.48 In order to implement these proposals, we propose to set the SMP Condition 2 published in Volume 5. As set out in Section 3, Section 87(3) of the Act authorises Ofcom to impose network access requirements.

Specific requirements for the publication of a Reference Offer

Current regulation

4.49 BT are currently required to publish a reference offer in relation to PIA in each Physical Infrastructure market, as set out in our 2018 PIMR Statement.

Our proposals

4.50 We are proposing to maintain the specific requirements for the publication of a Reference Offer in relation to PIA imposed in the 2019 PIMR. We consider that this proposed requirement is appropriate and proportionate in relation to BT's market power in the Physical Infrastructure market.

4.51 A requirement to publish a Reference Offer has two main purposes:

- a) to assist transparency for the monitoring of potential anti-competitive behaviour; and
- b) to give visibility to the terms and conditions on which other providers will purchase wholesale services.

4.52 We continue to believe that these purposes apply as much to PIA as they do to other forms of network access, such that a specific PIA reference offer is required in the Physical Infrastructure market.

4.53 We also continue to believe that the PIA Reference Offer must set out (as a minimum):

⁹⁰ For example, having access to sites where a telecoms provider locates its electronic equipment for the purposes of deploying a network using unrestricted PIA.

⁹¹ Digital Colony's response to the 2018 PIMR Consultation, page 2; TalkTalk's response to the 2018 PIMR Consultation, paragraph 5.6; and Vodafone's response to the 2018 PIMR Consultation, paragraph 6.34.

- conditions for telecoms providers to gain access to Physical Infrastructure including if appropriate training, certification and authorisation requirements for personnel to access and work in/on Physical Infrastructure.
- conditions for the provision of forecasts by telecoms providers in respect of their future requirements for PIA.
- the location of Physical Infrastructure or the method by which telecoms providers may obtain information about the location of Physical Infrastructure.
- procedures for the provision of information to telecoms providers about spare capacity, including arrangements for visual surveys of Physical Infrastructure to determine spare capacity.
- conditions for the inspection of the Physical Infrastructure at which access is available or at which access has been refused on grounds of lack of capacity.
- technical specifications for PIA, including:
 - technical specifications for permitted cables and associated equipment; and
 - cable installation, attachment and recovery methods.
- the methodology for calculating availability of spare capacity in Physical Infrastructure.
- arrangements for relieving congested Physical Infrastructure, including the repair of existing faulty infrastructure and the construction of new Physical Infrastructure.
- the information that a telecoms provider is required to provide to BT where that telecoms provider is requesting the repair of existing faulty infrastructure and/or the construction of new Physical Infrastructure necessary for SLAs and SLGs.
- Service Level Commitments and Service Level Guarantees in relation to the timescales for BT to respond to a request by a telecoms provider for PIA including where relevant to relieve congested Physical Infrastructure other than a congested Pole, where such a response confirms that the order has been accepted and includes how BT proposes to relieve that congestion.
- Service Level Commitments and Service Level Guarantees in relation to the timescales for completion by BT of any works necessary to relieve congested Physical Infrastructure (including the repair of existing faulty infrastructure and the construction of new physical infrastructure) other than a congested Pole.
- conditions on which telecoms providers may elect to undertake repair or build works on behalf of BT.
- conditions for the installation and recovery of cables and associated equipment.
- technical specifications for PIA, including:
 - technical specifications relevant to the repair of existing faulty Physical Infrastructure.
 - technical specifications relevant to undertaking build works.
- Service Level Commitments and Service Level Guarantees in relation to the timescales for BT to respond to a request by a telecoms provider to undertake works itself to relieve congested Physical Infrastructure.
- Service Level Commitments and Service Level Guarantees in relation to the timescales for BT to respond to a request by a telecoms provider to relieve a congested Pole where

such a response confirms that the order has been accepted and how BT proposes to relieve that congestion.

- Service Level Commitments and Service Level Guarantees in relation to the timescales for completion by BT of any works necessary to relieve a congested Pole.
- the arrangements for maintenance of cables and associated equipment installed by telecoms providers and of the Physical Infrastructure, including the provision for the temporary occupation of additional infrastructure capacity for the installation of replacement cables.

4.54 We consider that these requirements comprise the minimum information necessary to achieve the purposes set out above in relation to PIA.

4.55 Our reasons for proposing to impose each of the above requirements in the Physical Infrastructure market are to assist in areas that we understand are critical to, and valued by, telecoms providers who want to use PIA, as well as being required to ensure the PIA Reference Offer is effective – namely, issues regarding planning and surveying, maintenance and repair, connecting end customers and network deployment. To give effect to the above proposals, we propose to set the SMP condition 7 in Volume 5, Legal Instruments. As set out in Section 3, sections 87(6)(c) to (e) authorise the setting of SMP services conditions in relation to the Reference Offer.

Consistency with EC Recommendations and the BEREC Common Position

4.56 In developing our proposals, we have taken due account of the NGA Recommendation and utmost account of the BEREC Common Position on wholesale (physical) network infrastructure access⁹². We consider that our proposals are consistent with these measures.

4.57 The NGA Recommendation states that, where duct capacity is available, NRAs should mandate access to civil engineering infrastructure (Recommendation 13 of the NGA Recommendation). BP12(c) of the BEREC Common Position is to the same effect. The network access obligation we are imposing allows telecoms providers to access BT's physical infrastructure.

4.58 Recommendation 16 of the NGA Recommendation recommends that NRAs should, in accordance with market demand, encourage (or where legally possible under national law, oblige) the SMP operator, when building civil engineering infrastructure, to install sufficient capacity for other operators to make use of these facilities. While we do not require BT to install additional capacity, our approach to relieving congested infrastructure gives BT the incentive to do so.

4.59 Recommendation 17 of the NGA Recommendation and BP28 of the Common Position propose the creation of a database containing information on civil engineering

⁹² BEREC, BoR (12) 127. Although the NGA Recommendation and Common Position, strictly apply to the WLA market, the principles they set out in relation to physical infrastructure remedies are relevant to the physical infrastructure remedies we are proposing for the Physical Infrastructure market.

infrastructure. For the reasons explained in this section, we are imposing a requirement on BT to establish a physical infrastructure database. We consider that the scope of the information to be included in this database is appropriate in the context of the PIA requirement that we are imposing.

4.60 In relation to the objective of assurance of co-location at the access point (e.g. MDF, street cabinet, concentration point) and other associated facilities, the BEREC Common Position identifies, among other things, as best practice that:

“**BP16** NRAs should impose obligations with regard to the provision of co-location and other associated facilities on a cost-oriented basis under clear rules and terms approved by the regulator to support viability of the access products mentioned above.

BP16a NRAs should ensure that the remedies allow the optimised use of alternative operators’ existing infrastructures.

BP16b NRAs should ensure that these remedies allow co-location and other associated facilities to be used efficiently. In particular, NRAs should ensure that usage is not artificially segregated by product or market.”

4.61 We consider that our proposals are consistent with this best practice set out in the BEREC Common Position.

Consultation question(s)

Question 4.1: Do you agree with our proposed specific PIA remedies? Please set out your reasons and supporting evidence for your response.

5. Specific remedies: WLA, LL Access and IEC markets

Introduction

- 5.1 The proposed general remedies set out in Section 3 would apply to all forms of network access provided by BT across all relevant fixed telecoms markets to the extent set out. Similarly, the proposed specific access obligation in the form of PIA set out in Section 4 would support telecoms providers in deploying their own networks and in supplying downstream services, including services in the wholesale local access (WLA), leased line access (LL access) and inter-exchange connectivity (IEC) markets.
- 5.2 In this section we propose to impose certain specific remedies in the markets downstream of the physical infrastructure market where we have provisionally found BT to have SMP. These are the markets for WLA in Area 2 and Area 3, LL Access in Area 2, Area 3 and the High Network Reach area, and IEC from BT Only and BT+1 exchanges. These remedies are designed to address the competition concerns we have provisionally identified in our SMP market assessment (Volume 2) and in line with our approach to remedies (Section 1).
- 5.3 The proposed specific remedies would require Openreach to provide network access to services in the relevant WLA, LL Access and IEC markets, and any necessary ancillary services. These are broadly in line with those imposed in the 2018 WLA and 2019 BCMR.

Table 5.1: Summary of proposed specific access remedies

Market	Specific access remedy
WLA	Metallic Path Facility (MPF)
	Sub-loop Unbundling (SLU)
	Virtual Unbundled Local Access (VULA) at 40/10
	VULA at all bandwidths
LL Access	Ethernet and Wavelength division multiplex (WDM) at all bandwidths
IEC	Ethernet and WDM at all bandwidths

- 5.4 To support these proposed network access remedies, we propose that Openreach should include certain specific information in its Reference Offer on some of these specific access remedies.
- 5.5 We describe below the form of remedy which we are proposing to impose in each market and the extent to which we propose that remedy should apply. In relation to the WLA market, we set out how we intend to apply the specific remedies in view of our approach to copper retirement and a proposed minimum contract period for VULA services.

5.6 In addition to the above specific remedies, we also propose to require Openreach to provide access to dark fibre in the LL Access and IEC markets and a suite of quality of service remedies in the WLA, LL Access and IEC markets. We discuss these proposals in sections 6 and 7.

Proposed specific remedies in the WLA market

Requirement to provide Local Loop Unbundling (LLU) in the form of MPF

Background

5.7 LLU is a process by which BT offers access to its copper-based local access network to other telecoms providers. LLU enables other telecoms providers to deploy their own equipment in order to provide retail services (voice and/or standard broadband).

5.8 With LLU a telecoms provider can either use the entire local access connection, known as Metallic Path Facility (MPF), or they can share the local access connection, known as Shared Metallic Path Facility (SMPF). This enables a telecoms provider to choose to offer either:

- a retail bundle of voice and standard broadband services, as enabled by MPF; or
- just a retail standard broadband service, as enabled by SMPF.

5.9 Since its introduction in 2000, each of MPF and SMPF have been imposed as a remedy in successive market reviews. In 2018 WLA we deregulated SMPF because we found that the vast majority of non-BT lines are provided using MPF and so the role of SMPF in supporting LLU based entry was no-longer important to downstream competition.

Our proposals

5.10 We propose to retain the obligation on BT to provide network access in the form of MPF, including relevant ancillary services. We also propose that MPF is subject to the following charge controls, as set out in Volume 4:

- Area 2 – charge control with prices indexed in line with inflation (CPI-0%); and
- Area 3 – cost-based charge control based on a Regulatory Asset Base approach.

Our reasoning

5.11 For the reasons set out below, we consider that our proposals are appropriate and proportionate in relation to BT's market power in the WLA market.

Network access to MPF

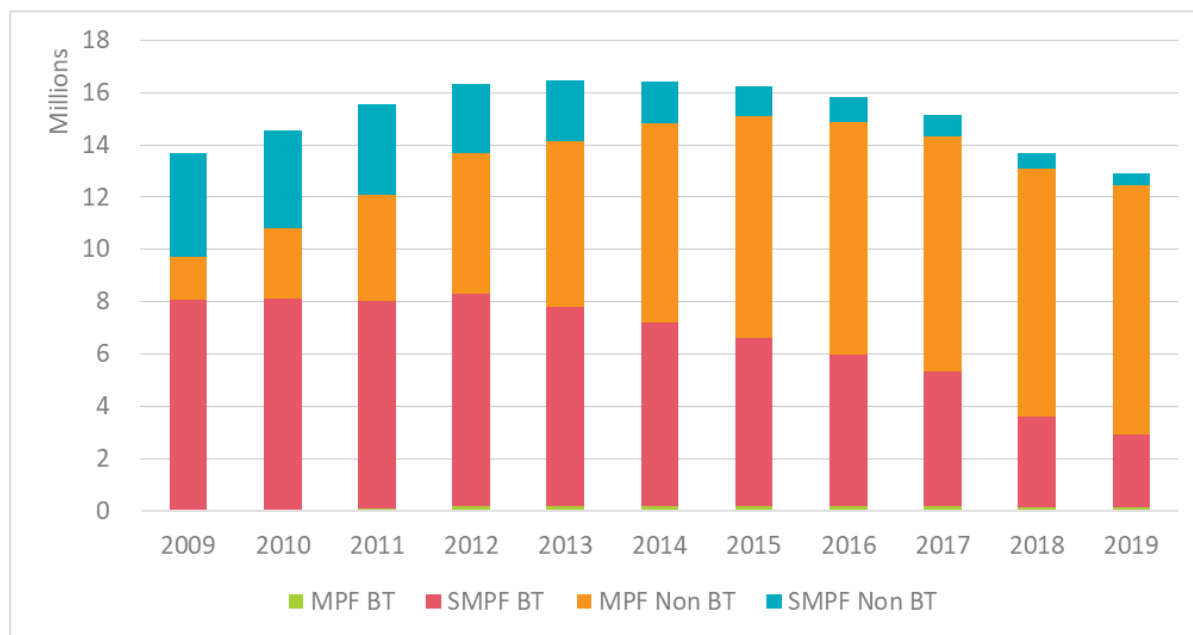
5.12 MPF has played an important role in promoting and sustaining competition in the provision of retail voice and broadband services.

5.13 Currently, around [8<]m broadband lines are provided by third-party telecoms providers using MPF (including those cases where MPF is used in conjunction with FTTC services), which represents about a third of all UK broadband lines.

5.14 BT, however, does not make significant use of MPF to support its retail customer base. Instead, BT’s broadband services are predominantly based on its SMPF or FTTC services, supported by a copper line in the form of wholesale line rental (WLR). Currently, there are around [§<]m BT SMPF lines.

5.15 We have set out the historical volume movements of LLU services in Figure 5.2.

Figure 5.2: Historical movements of LLU services



Source: Openreach reports to Ofcom, 299 Ofcom Supplement, December 2009 to October 2019⁹³

5.16 We expect the ongoing rollout of FTTP infrastructure to incentivise migration away from copper-based services to fibre-based services. However, where there is no FTTP, third-party telecoms providers are likely to continue to rely on MPF for the provision of standard broadband services or as a support to superfast broadband using FTTC services. This is captured in our volume forecast – we expect external MPF lines to decrease to around [§<]m in 2025/26 (including those cases where MPF is used in conjunction with FTTC services), which would represent just under a third of all UK broadband lines.⁹⁴

5.17 In the absence of a specific access obligation on MPF, BT would have an incentive to put its competitors at a disadvantage by not offering MPF services, or by doing so only on unfavourable or discriminatory terms and/or quality of service. This would result in consumer harm in the form of service degradation, restricted choice of provider and/or higher prices. We therefore propose to retain the specific access obligation on BT in relation to MPF to protect the ability of telecoms providers using its network to continue to compete with BT downstream in the provision of broadband services.

⁹³ Openreach report to Ofcom, 299 Ofcom Supplement, December 2009 to December 2018 and October 2019.

⁹⁴ Ofcom base case forecast. See Volume 4. For the purposes of calculating our proposed charge controls, we have constructed a range for the service volume forecasts based on different growth rates for Openreach FTTP and different impacts from alternative networks.

- 5.18 In addition to this specific access service, a number of ancillary services are necessary to enable and support the provision of MPF, including as a minimum space and power, site access, tie cables, and any other supporting services used for installation, maintenance, modification, and ceasing of this specific access service. We propose that our specific access remedy should require BT to provide these ancillary services.

Disapplication of the network access obligation in relation to copper retirement

- 5.19 In Section 2 we set out how we propose to support the copper retirement process, i.e. the transition from copper-based services to fibre-based services. In particular, we propose a phased removal of the regulation of copper-based services.
- 5.20 To implement our approach to copper retirement, in Section 3 we propose to limit the general network access obligation on BT's copper network. In effect, this would also disapply the specific requirement to meet new requests for MPF network access in exchange areas where ultrafast broadband is available to 75% of premises, for the premises where FTTP is available. This means that, if the proposed requirements are met, and subject to its contractual obligations with the telecoms provider, BT would be able to refuse the provision of a new MPF service (this allows the "stop sell" of copper services – see Section 2).
- 5.21 As set out in Section 2, we do not consider that it is appropriate to disapply the requirement to continue the provision of existing MPF connections.

Reference Offer

- 5.22 We propose to retain, for the purposes of transparency, the existing specific Reference Offer requirements for MPF services. These would require BT to, among other things, include in the Reference Offer details of accommodation arrangements⁹⁵ (e.g. the provision of space and power) and Service Level Agreements (SLAs) and Service Level Guarantees (SLGs).
- 5.23 We propose to require BT to make an SLG payment for each day that it contractually fails to provide or repair an MPF service. These payments should continue until the situation is resolved, i.e. without a limit on the duration of the delay.⁹⁶ This proposal would address our concern that BT has the ability and incentive to focus on new MPF installation or repair requests at the expense of those cases that are already late. We consider that the customer detriment associated with delayed repairs and installations is particularly pertinent for MPF due to the degree to which consumers still rely upon these services for voice and broadband services.

Charge controls

- 5.24 In Section 1 we set out our approach to pricing of wholesale services in the WLA market. In Sections 1 and 2 of Volume 4 we set out in detail the proposed design of each charge control and our justification for it.

⁹⁵ In the 2018 WLA Statement, we referred to accommodation services in relation to MPF as co-location and/or co-mingling. For the purposes of this statement, accommodation services include co-location and co-mingling.

⁹⁶ We had previously imposed this requirement through a direction. Consistent with our approach in the 2018 WLA Statement, we are now proposing to incorporate the requirement in the relevant SMP condition.

Disapplication of the price controls in relation to copper retirement

- 5.25 In view of our proposed approach to copper retirement set out in Section 2, we consider that the proposed MPF charge controls would need to support a smooth transition from legacy copper broadband to FTTP services while protecting consumers and ensuring that, where possible, there are no households left behind.
- 5.26 We propose to disapply the charge control obligations in relation to MPF, for those premises where FTTP is available, in exchange areas where ultrafast broadband deployment is complete and after a minimum of two years have passed since ultrafast broadband was deployed to 75% of premises. In addition, we also propose that in these cases, the general requirement for fair and reasonable prices does not apply. This means that, if the proposed requirements are met, and subject to its contractual obligations with the telecoms provider, BT would be able to increase the wholesale charges for its MPF services.
- 5.27 We consider that this proposal is appropriate and proportionate in protecting competition and consumers in the WLA market. As discussed below, we propose to impose a charge control on a suitable VULA 40/10 product.

Conclusion

- 5.28 In order to implement these proposals, we propose to include the requirements outlined above in the SMP Conditions, 1, 2 and 7 published at Volume 5. As set out in Section 3: Section 87(3) of the Act authorises Ofcom to impose network access requirements; and Sections 87(6)(c) to (e) authorise the setting of SMP services conditions in relation to the Reference Offer.

Consistency with the BEREC Common Position

- 5.29 We consider that our decision to require MPF is consistent with the BEREC Common Position on wholesale (physical) network infrastructure access⁹⁷, in particular BP7a which states “NRAs should impose unbundled access to the copper loops at the MDF”. In terms of BP9-10 concerning the provision of products telecoms providers can use to reach the point at which LLU is made available (i.e. the exchange), this involves the provision of backhaul. In that regard, we note that we propose below to require BT to supply leased line products which can be used for such purposes where competition in leased line provision is otherwise insufficient.
- 5.30 We consider that the requirement to make available the specified ancillary services is consistent with BP16 which states that “NRAs should impose obligations with regard to the provision of co-location and other associated facilities on a cost-oriented basis under clear rules and terms approved by the regulator to support viability of the access products mentioned above”.

⁹⁷ BEREC, BoR (12) 127

Requirements to provide VULA

Background

- 5.31 Virtual Unbundled Local Access (VULA) is a virtual connection over a shared high-speed access network. Such a high-speed network could be a hybrid fibre/copper network (e.g. FTTC or G.fast) or a full fibre network (FTTP). Openreach currently offers a number of services to fulfil its requirement to provide VULA. These include:
- a) Copper-based VULA
 - i) **FTTC**: Generic Ethernet Access over Fibre-to-the-Cabinet uses a fibre connection between the serving exchange and the cabinet, and a copper connection between the cabinet and the premise to provide a superfast broadband connection.
 - ii) **SOGEA**: Single Order Generic Ethernet Access over Fibre-to-the-Cabinet is a standalone product variant that allows customers to buy a superfast broadband line without the need to buy a copper telephone line.
 - iii) **G.fast**: GEA over Fibre-to-the-Distribution-point uses a fibre connection between the serving exchange and the distribution point, and a copper connection between the distribution point and the premise. It provides higher broadband speeds. Over short copper connections G.fast is capable of delivering ultrafast broadband connection.
 - iv) **SOG.fast**: Single Order G.fast is a standalone product variant that allow customers to buy a broadband line without the need to buy a copper telephone line.
 - b) Fibre-based VULA
 - i) **FTTP**: Generic Ethernet Access over Fibre-to-the-Premise uses fibre connections all the way to the customer premise to deliver an ultrafast broadband connection.

Our proposals

- 5.32 We propose to retain an obligation on BT to provide network access in the form of VULA, including relevant ancillary services. We also propose an obligation on BT to supply a VULA 40/10 service.
- 5.33 We propose that the VULA services are subject to the following charge controls prior to copper retirement (see Table 5.3).

Table 5.3: Proposed charge controls on VULA services prior to copper retirement⁹⁸

VULA service	Area 2	Area 3
Copper-based VULA 40/10	Charge control with prices indexed in line with inflation (CPI-0%)	Cost-based charge control based on a RAB approach
Copper-based VULA other bandwidths	No charge control	RAB approach
Fibre-based VULA 40/10	Where copper-based VULA is not available, charge control set at copper-based VULA price plus a premium to reflect the additional value that fibre offers over copper.	
Fibre-based VULA other bandwidths	No charge control	No charge control

Our reasoning

5.34 For the reasons set out below, we consider that our proposals are appropriate and proportionate in relation to BT's market power in the WLA market.

Network access to VULA

5.35 Access to VULA services is key for promoting and sustaining competition in the provision of superfast and ultrafast broadband services.

5.36 Rival telecoms providers rely on Openreach's copper-based VULA services as end-users adopt superfast broadband in advance of fibre rollout. Currently, around [X]m broadband lines are provided by third-party telecoms providers using Openreach's copper-based VULA products (mostly FTTC), which represents about a sixth of all UK broadband lines. We expect this trend to continue over the course of this review period until the arrival of FTTP. In particular, we forecast external copper-based VULA lines to increase to around [X]m in 2025/26, which would represent just under a third of all UK broadband lines.⁹⁹

5.37 In relation to fibre-based VULA, we note that as of May 2019, only around 8% of all UK premises had access to an FTTP service (as opposed to 95% for superfast broadband).¹⁰⁰ We expect that over time most, if not all, of the country will have access to FTTP services. However, we do not expect the FTTP rollout to be completed within this market review period.

⁹⁸ Prior to copper retirement means prior to Openreach deploying ultrafast broadband to 75% of premises in an exchange area.

⁹⁹ Ofcom base case forecast. See Volume 4. For the purposes of calculating our proposed charge controls, we have constructed a range for the service volume forecasts based on different growth rates for Openreach FTTP and different impacts from alternative networks.

¹⁰⁰ Ofcom, [Connected Nations Update: Summer 2019](#). [accessed 12 December 2019]

- 5.38 In the absence of a VULA requirement, BT would have the ability and incentive to favour its own retail operations, thereby hindering sustainable competition in the corresponding downstream services and ultimately harming the interests of customers. VULA prevents this harm to consumers by enabling telecoms providers to provide retail superfast and ultrafast broadband services. We therefore propose to reimpose the obligation for BT to supply VULA.
- 5.39 Where BT is required to provide MPF, telecoms providers should be able to use that service in combination with VULA. Therefore, we propose that where fibre-based VULA is not available, Openreach is required to provide either an FTTC or G.fast variant of copper-based VULA. Openreach would be able to provide SOGEA and SOG.fast but, if a telecoms provider requests new access to a non-single order product (either FTTC or G.fast), Openreach would have to meet that request through providing one of these variants at its discretion.¹⁰¹
- 5.40 In 2010 WLA we set out five high-level characteristics that we considered the VULA service would need to adhere to. These characteristics were maintained in the 2014 WLA and 2018 WLA.
- **Local access:** interconnection by the access seeker should occur locally, i.e. at the first feasible aggregation point. In practice this is likely to be in the serving exchange where the first Ethernet switch is located (fibre exchange).¹⁰²
 - **Service agnostic access:** VULA, like LLU, should be a generic access service. That is, it should provide service agnostic connectivity, replicating one of the key features of LLU. This means the service should not be confined to supporting particular downstream services.
 - **Uncontended access:** the connection, or capacity, between the consumers' premises and the serving exchange where interconnection takes place should be dedicated to the customer, i.e. the connection should be uncontended.¹⁰³
 - **Control of access:** telecoms providers should be given flexibility to allow them to offer differentiated services to consumers. In order to provide different types of services, this freedom of control could potentially involve varying quality of service parameters.
 - **Control of customer premises equipment (CPE):** like the control of access characteristic described above, competing telecoms providers should have the ability to control customer premises equipment, giving them the ability to differentiate how they deliver services to their customers.
- 5.41 Considering the limitations of non-physical layer access, these characteristics allow reasonable control and flexibility such as to enable telecoms providers to provide differentiated services in competition with BT over its fibre local access network. We

¹⁰¹ For avoidance of doubt, where BT is required to provide MPF, if a telecoms provider requests FTTC, Openreach would be able to meet that request through offering G.fast, and if a telecoms provider requests G.fast, Openreach would be able to meet that request through offering FTTC.

¹⁰² Note that the local serving exchanges for fibre access (FTTC and FTTP) are not necessarily the same local serving exchanges as for copper access. This is because fibre does not have the same distance limitations as copper and therefore a higher level of aggregation is possible.

¹⁰³ An uncontended service is one in which the bandwidth to each user is dedicated. In other words, the bandwidth is not shared by other users.

therefore propose that the above VULA characteristics remain appropriate without modifications or additions. As with previous WLA market reviews, we do not propose to include the characteristics in the SMP condition itself.

- 5.42 In addition to this specific access service, a number of ancillary services are necessary to enable and support the provision of VULA, including as a minimum, space and power, site access, cablelink, and any other supporting services used for installation, maintenance, modification, and ceasing of this specific access service. We propose that our specific access remedy should require BT to provide these ancillary services.

Network access to VULA 40/10

- 5.43 As we discuss in sections 1 and 2 of Volume 4, we consider that it is appropriate to regulate BT's VULA charges in Area 2 and in Area 3 (post copper retirement) on the basis of a 40/10 anchor. Where BT is required to provide FTTC, we propose that it must provide a 40/10 version. Where BT is not required to provide FTTC, we propose that it must provide a VULA 40/10 over whatever successor service is available, that is either FTTP, G.fast or SOG.fast. As with the proposed VULA requirement above, we propose that where fibre-based VULA 40/10 is not available, Openreach is required to provide either an FTTC or G.fast variant of the copper-based VULA 40/10.

Disapplication of the network access obligation in relation to copper retirement

- 5.44 To implement our approach to copper retirement, in Section 3 we propose to limit the general network access obligation on BT's copper network. In effect, this would also disapply the specific requirement to meet new requests for network access to copper-based VULA in exchange areas where ultrafast broadband is available to 75% of premises, for the premises where FTTP is available. This means that, if the proposed requirements are met, and subject to its contractual obligations with the telecoms provider, BT would be able to refuse the provision of a new copper-based VULA service (this allows the "stop sell" of copper services – see Section 2).
- 5.45 As set out in Section 2, we do not consider that it is appropriate to disapply the requirement to continue the provision of existing copper-based VULA connections.

Reference Offer

- 5.46 We propose to retain, for the purposes of transparency, the existing specific Reference Offer requirements for VULA services. These would require BT to, among other things, include in the Reference Offer details of accommodation arrangements (the provision of space and power) and SLAs and SLGs.
- 5.47 We propose to require BT to make an SLG payment for each day that it contractually fails to provide or repair a VULA service. These payments should continue until the situation is resolved, i.e. without a limit on the duration of the delay.¹⁰⁴ This proposal addresses our concern that BT has the ability and incentive to focus on new VULA installation or repair

¹⁰⁴ We had previously imposed this requirement through a direction. We are now proposing to incorporate the requirement in the relevant SMP condition.

requests at the expense of those cases that are already late. We consider that the customer detriment associated with delayed repairs and installations is particularly pertinent for VULA because these services underpin the mass market supply of superfast and ultrafast broadband.

Charge controls

5.48 In Section 1 we set out our approach to pricing of wholesale services in the WLA market. In sections 1 and 2 of Volume 4, we set out in detail the proposed design of each charge control and our justification for it.

Disapplication of the price controls in relation to copper retirement

5.49 As with MPF, we have also considered how the proposed VULA charge controls could best support the copper retirement process to ensure a smooth transition from legacy copper broadband to FTTP services while protecting consumers.

5.50 We propose to disapply charge control obligations in relation to copper-based VULA 40/10, for those premises where FTTP is available, in exchange areas where ultrafast broadband deployment is complete and after a minimum of two years have passed since ultrafast broadband was deployed to 75% of premises. In addition, we also propose that in these cases, the general requirement for fair and reasonable prices does not apply. This means that, if the proposed requirements are met, and subject to its contractual obligations with the telecoms provider, BT would be able to increase the wholesale charges for its copper-based VULA 40/10 services.

5.51 We consider that this proposal is appropriate and proportionate in protecting competition and consumers in the WLA market. Where the charge control is disapplied, customers would be protected by the proposed charge control on the fibre-based VULA 40/10 service.

Conclusion

5.52 In order to implement these proposals, we propose to include the requirements outlined above in the SMP Conditions 1, 2 and 7 published at Volume 5. As set out above, Sections 87(3), 87(6)(c), (d) and (e) of the Act provide a basis for these draft SMP conditions. In sections 1 and 2 of Volume 4, we set out how we propose to implement the charge controls set out above.

Consistency with EC Recommendations and the BEREC Common Position

5.53 We consider that our proposed VULA remedy remains consistent with both the NGA Recommendations and the BEREC Common Position on wholesale (physical) network infrastructure access¹⁰⁵ of which we are required to take utmost account.

5.54 While not covered by the Articles, Recital 21 of the NGA Recommendation states:

“NRAs should be able to adopt measures for a transitional period mandating alternative access services which offer the nearest equivalent constituting a substitute

¹⁰⁵ BEREC, BoR (12) 127

to physical unbundling, provided that these are accompanied by the most appropriate safeguards to ensure equivalence of access and effective competition. In any event, NRAs should in such cases mandate physical unbundling as soon as technically and commercially feasible.”

- 5.55 The BEREC Common Position similarly provides that in the case of FTTC, “NRAs may consider imposing an active remedy providing access at the MPoP¹⁰⁶ replicating as much as possible physical unbundling” (BP7c), and in the case of FTTP “Until any alternative technologies allowing physical unbundling at the MPoP become available the NRAs should consider imposing an active remedy providing access at the MPoP replicating as much as possible physical unbundling” (BP6).
- 5.56 We consider that VULA offers the nearest equivalent to physical unbundling over both FTTC and FTTP.
- 5.57 We consider that VULA is consistent with BP25 which states that “NRAs should consider which information on the SMP-operator’s ‘newly’ rolled-out NGA network is essential to competitors and should be available well in advance on a non-discriminatory basis”. The proposed SMP Condition 5 in Volume 5 requires BT to provide VULA to third parties with the same commercial information as BT provides VULA to its own downstream divisions, as a result of its EOI obligations.

Minimum contract period for VULA

Background

- 5.58 BT’s VULA services are subject to minimum contract periods. Cancelling a service before the end of a minimum contract period causes a telecoms provider to incur a held-to-term charge from BT.

Our proposals

- 5.59 We propose a limit of one month on minimum contract periods for all VULA services, including FTTC, G.fast and FTTP.

Our reasoning

- 5.60 For the reasons set out below, we consider that our proposals are appropriate and proportionate in relation to BT’s market power in the WLA market.
- 5.61 Reducing minimum contract periods would promote wholesale competition. At a time when we are seeking to promote network competition, measures that reduce the barriers to switching are desirable because they avoid the risk that Openreach locks-out new competitors from gaining customers through contract prohibitions.

¹⁰⁶ The “Metropolitan Point of Presence” (MPoP) is the point of inter-connection between the access and core networks of a fibre network operator.

- 5.62 Reducing minimum contract periods is also likely to promote retail competition. This is because telecoms providers have the ability and incentive to pass the costs which arise from held-to-term charges on to consumers, which may reduce consumers' incentives to switch between telecoms providers.
- 5.63 Furthermore, in relation to FTTC, in setting our proposed charge control for the 40/10 service, we have allowed BT to fully recover its connection costs for these services through the initial connection charge, and its ongoing network costs through the rental charge. As such, BT will not need to rely on longer minimum terms and higher held-to-term charges in order to recover its costs.
- 5.64 In terms of the implementation of this requirement, SMP Condition 1 of the proposed legal instrument includes a power for Ofcom to direct the terms and conditions of network access provided in accordance with that condition. For the reasons set out above, we intend using this power to make a Direction (see Volume 5) limiting the length of the minimum contract period following VULA migrations and connections to no longer than one month and expand the scope of the direction to all VULA services. As set out above, Sections 87(6)(c), (d) and (e) of the Act provide a basis for these draft SMP conditions.

Requirement to provide SLU

Background

- 5.65 Sub-loop unbundling (SLU) is a service offered by BT that allows telecoms providers to deploy their own equipment at a network distribution point (usually the location of the cabinet) and to use BT's lines from the cabinet to the customer. Telecoms providers can either rent the entire sub-loop (the connection between the cabinet and the customer) or share it with BT.

Our proposals

- 5.66 We propose to retain an obligation on BT to provide network access in the form of SLU. We do not propose a specific price regulation on SLU services.

Our reasoning

- 5.67 For the reasons set out below, we consider that our proposals are appropriate and proportionate in relation to BT's market power in the WLA market.

Network access to SLU

- 5.68 Historically, the use of SLU has been relatively low. As noted in the 2018 WLA, between 1 January 2014 and 1 September 2015 BT received a small number of requests (between 50 and 100 [X]) for SLU with 70% ([X]) being accepted and agreed. BT has also previously stated that as of 11 September 2015, there were less than 200 cabinets where

SLU had been implemented.¹⁰⁷ We believe that SLU volumes have not changed significantly since we gathered this information from BT.

5.69 Nevertheless, SLU is being used successfully by a small number of telecoms providers that are providing services in those areas where BT has not rolled out its superfast broadband and has not upgraded its local access connections to fibre.

5.70 We have considered whether the general remedies (the obligation to provide network access on fair and reasonable terms, conditions and charges) would be sufficient to ensure telecoms providers are able to continue to use SLU effectively. However, BT does not use SLU. Therefore, in the absence of a specific obligation, there is a risk that BT would choose to withdraw its SLU services.

5.71 For these reasons, we are proposing to retain the obligation for BT to offer a SLU service to all telecoms providers who reasonably request such services.

5.72 We also propose to retain our policy on vectoring¹⁰⁸ as set out in the 2018 WLA. In summary, we propose that:

- where BT has activated vectoring, it would be reasonable for BT to deny a request for SLU if BT could demonstrate that it had taken all reasonable steps to co-ordinate SLU with the vectoring; and
- where a telecoms provider is already buying SLU at a cabinet where BT wishes to deploy vectoring, it would be unlikely to be reasonable for BT to withdraw SLU.

5.73 In addition to this specific access service, we propose to require BT to provide such ancillary services as may be reasonably necessary for the use of SLU (including backhaul from the cabinet).

5.74 As noted in Section 3, we are not proposing an EOI obligation for SLU services.

Disapplication of the network access obligation in relation to copper retirement

5.75 To implement our approach to copper retirement, in Section 3, we propose to limit the general network access obligation on BT's copper network. In effect, this would also disapply the specific requirement to meet new requests for SLU network access in exchange areas where ultrafast broadband is available to 75% of premises, for the premises where FTTP is available. This means that, if the proposed requirements are met, and subject to its contractual obligations with the telecoms provider, BT would be able to refuse the provision of a new SLU service (this allows the "stop sell" of copper services – see Section 2).

5.76 As set out in Section 2, we do not consider that it is appropriate to disapply the requirement to continue the provision of existing SLU connections.

¹⁰⁷ BT response to s.135 notice dated 8 October 2015.

¹⁰⁸ Vectoring uses noise cancellation technology to mitigate the effect of the electromagnetic interference that occurs on copper access connections, also known as cross-talk. Cross-talk can have a significant detrimental effect on VDSL speeds.

No price controls

- 5.77 While we consider it appropriate and proportionate to retain the obligation for BT to offer a SLU service to all telecoms providers who reasonably request such services, given the limited usage of SLU and the availability of alternative infrastructure and services, we do not propose that SLU services are subject to a specific form of price control. Instead, as per our proposed general remedies, SLU services would be subject to fair and reasonable charges in both Areas 2 and Area 3.

Disapplication of the fair and reasonable prices obligation in relation to copper retirement

- 5.78 As with MPF and VULA, we propose to disapply the general requirement for fair and reasonable prices, for those premises where FTTP is available, in exchange areas where ultrafast broadband deployment is complete and after a minimum of two years have passed since ultrafast broadband was deployed to 75% of premises. We consider that this proposal is appropriate and proportionate in protecting competition and consumers in the WLA market. Where the fair and reasonable prices obligation is disappplied, customers would be protected by the proposed charge control on the fibre-based VULA 40/10 product.

Conclusion

- 5.79 In order to implement these proposals, we propose to set SMP Conditions 1 and 2 at Volume 5. As set out above, Section 87(3) of the Act provides a basis for these draft SMP conditions.

Consistency with the EC recommendations and the BEREC Common Position

- 5.80 We consider that the application of a SLU remedy along with those ancillary services as may reasonably be necessary for the use of SLU is consistent with Recommendation 29 of the NGA Recommendation which states that NRAs should impose an obligation of unbundled access to the copper sub-loop. The same recommendation states that an SLU remedy should be supplemented by backhaul measures “including fibre and Ethernet backhaul where appropriate”. In this regard, we propose that BT is required to provide the necessary ancillary services and in relation to backhaul specifically, we propose the requirement to supply leased lines (in areas where wholesale competition in leased lines is insufficient) which can be used for SLU backhaul. Telecoms providers can, in certain cases, also build their own backhaul, including through use of the proposed PIA remedy.
- 5.81 The Costing and Non-discrimination Recommendation sets out that NRAs should consider, if they believe that a non-discrimination obligation is appropriate, whether it would also be proportionate to impose EOI (Recommendation 7). We note that the considerations an NRA should take into account include the costs (especially whether the competition benefits outweigh the costs of system redesign) and the potentially positive effects on innovation and competition. As set out above, we do not consider it proportionate to require BT to provide SLU on an EOI basis. We consider that the proposed no undue discrimination obligation is consistent with EOO (as set out in Section 3), which Recommendation 9 says should be applied in the absence of EOI. Further, given the proposed requirement for EOO, which includes requirements around comparability of functionality, we do not consider it necessary

to put in place further obligations to ensure technical replicability (Recommendations 11-18).

- 5.82 In terms of the BEREC Common Position, we consider that the proposal to require SLU is consistent with BP7 and that the requirements to make available the specified ancillary services with associated pricing obligations fulfils BP16.

Low bandwidth fibre product for narrowband services

Background

- 5.83 Openreach has announced that it will withdraw its provision of PSTN services by December 2025.¹⁰⁹ This withdrawal means that voice customers currently served by Openreach's WLR products (including ISDN) will need to migrate to an IP-based service on or before that date. The PSTN switch off will also impact specialist downstream services such as telecare devices, alarms, monitoring control systems used by the water, energy and transport industries and payment card services.
- 5.84 In our 2017 Narrowband market review we noted that the main providers for the voice-only and 'semi-passive' lines that support these services were BT Retail and the Post Office.¹¹⁰
- 5.85 Openreach has committed to maintain the WLR products on fair and reasonable terms until the PSTN switch off. Openreach alongside the rest of the industry is working on ensuring that all existing voice and other analogue narrowband services remain functional after the PSTN switch off, and that adequate communication is made with suppliers and end users.

Market developments over the forthcoming review period

- 5.86 As set out in Section 9 of Volume 2, we have provisionally concluded that *ex ante* regulation is no longer appropriate for the narrowband market. Accordingly, given Openreach's commitment to maintain its WLR products on fair and reasonable terms until 2025, we are not proposing any transitional regulation.
- 5.87 Openreach has said it will develop a low bandwidth broadband product to support existing voice-only and similar low bandwidth applications within its GEA footprint (FTTC and FTTP) after PSTN switch off. This is expected to be available from Q1/Q2 2020. This will support the migration to IP for those premises that wish to retain a fixed voice service that do not otherwise wish to receive a broadband service.
- 5.88 Openreach¹¹¹ proposes that the low bandwidth fibre products will be 500kbit/s symmetric which should enable CPs to provide high quality voice calls and key features like three-way calling. Openreach has also stated that this will be available at voice economics. Confirmation of specification and proposed price is expected from Openreach in early 2020.

¹⁰⁹ <https://www.openreach.co.uk/orpg/home/products/wlrwithdrawal/wlrwithdrawal.do>

¹¹⁰ 2017 NMR Statement, paragraphs 3.1 and 6.13.

¹¹¹ Openreach, 17 June 2019. [Response to Openreach Industry Consultation on: An exchange-based approach to upgrading the UK's digital infrastructure with FTTP](#), Page 5. [accessed 17 December 2019, Openreach login account required]

- 5.89 As Openreach has announced a “stop-sell” for current WLR services for September 2023, this would mean new voice only customers from this date will have to be served on the new product(s) and these must be available nationally.
- 5.90 We consider that such a service would fall with the scope of a reasonable request for network access. Given Openreach’s commitments to develop a low bandwidth broadband product at charges comparable to the WLR service, we are not minded at this time to impose any specific obligation on Openreach for the provision of such service. As it would fall within the scope of the general access obligation, the general remedies set out in Section 3 would apply.

Proposed specific remedies in the LL access markets

Requirement to provide leased lines for fibre connectivity at all bandwidths

Background

- 5.91 Openreach’s leased lines are active services that include the provision of electronic transmission equipment for the conveyance of signals in addition to the underlying passive infrastructure and fibre. Leased lines access services provide a dedicated single link service from an end user site to a point of aggregation. BT currently provides two key forms of leased lines access services:
- Ethernet services, such as Openreach’s Ethernet Access Direct and Ethernet Backhaul Direct;¹¹² and
 - Wavelength division multiplex (WDM) services, such as Openreach’s Optical Spectrum Access (OSA) and OSA Filter Connect.¹¹³

Our proposals

- 5.92 We propose to require BT to provide network access in the form of each of Ethernet and WDM leased lines at all bandwidths, including relevant ancillary services. We also propose that leased lines at all bandwidths in Area 2 and Area 3 are subject to a charge control with prices indexed in line with inflation (CPI-0%). We do not propose specific price regulation in HNR areas outside the CLA.

Our reasoning

- 5.93 For the reasons set out below, we consider that our proposals are appropriate and proportionate in relation to BT’s market power in the LL access markets.

¹¹² Ethernet means services using a standard networking protocol defined in IEEE 802.3, published by the Institute of Electrical and Electronics Engineer. Ethernet has speeds of 10Mbit/s, 100Mbit/s, 1Gbit/s, or 10Gbit/s.

¹¹³ WDM is a technology that uses different colours (wavelengths) of light to create separate circuits over the same fibre, or pairs of fibre. WDM leased lines typically have multiple circuits, each running at 10Gbit/s or more.

Network access to LL access services

- 5.94 In the LL access markets, rival telecoms providers are heavily dependent on buying leased lines from BT to compete in the provision of business connectivity services downstream. Currently, around [X] business connectivity lines across all bandwidths are provided by third-party telecoms providers using Openreach's leased lines access services, which represents a substantial part [X] of all Openreach leased lines in that market. We project that number to increase to [X] in 2025/26, which would represent the same proportion of all Openreach leased lines in that market.
- 5.95 Absent regulation, BT would have the incentive and ability to refuse to provide access to its leased lines access network or not provide access on terms that would secure efficient investment and innovation, both in the wholesale LL access markets and the related downstream retail markets. This would result in consumer harm in the form of service degradation, restricted choice of provider and/or higher prices. We therefore propose that BT should be required to provide network access to each of Ethernet and WDM leased lines at all bandwidths.
- 5.96 The LL access markets encompass all access circuits, including circuits between a customer site and a telecoms provider's network node or data centre. However, we only propose to require BT to provide leased lines access services between a customer site and a BT exchange, or between two customer sites. This is because, in our view, regulated products between customer sites and exchanges, and from non-competitive exchanges to other exchanges (see next subsection), would be sufficient to ensure that telecoms providers can access competitive alternatives for connections to network nodes or data centres.
- 5.97 In addition to the specific access service, a number of ancillary services are necessary to enable and support the provision of leased lines access services, including as a minimum space and power, site access, cablelink, interconnect, Time-related Charges (TRCs), Excess Construction Charges (ECCs) and any other supporting services used for installation, maintenance, modification, and ceasing of this specific access service. We propose that our specific access remedy should require BT to provide these ancillary services.

Reference Offer

- 5.98 We propose to retain, for the purposes of transparency, the existing specific Reference Offer requirements for Ethernet services. These would require BT to include in the Reference Offer SLAs and SLGs for the completion of the provision of service and fault repair times.

Charge controls

- 5.99 In Section 1 we set out our approach to pricing of wholesale services in the LL access market. In sections 1 and 2 of Volume 4 we set out in detail the proposed design of each charge control and our justification for it.

Conclusion

5.100 In order to implement these proposals, we propose to include the requirements outlined above in the SMP Condition 2 published at Volume 5. As set out above, Section 87(3) of the Act provides a basis for these draft SMP conditions.

Consistency with the BEREC Common Position

5.101 We have taken utmost account of the BEREC Common Position on wholesale leased lines¹¹⁴, in arriving at our proposed conditions, including BP1 to BP3a which appear to us to be particularly relevant in this context. We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

Classification of circuits that cross boundaries between LL access markets

5.102 In the LL access market, we propose that circuits should be classified as set out in Table 5.4.

Table 5.4: Proposed classification of circuits that cross boundaries between LL Access markets

Classification of circuit	Location of circuit ends
CLA	Both ends are in the CLA
HNR	Both ends are in the HNR
	One end is in the HNR and the other in the CLA
Area 2	Both ends are in Area 2
	One end is in Area 2 and the other in the CLA, or HNR areas
Area 3	One or both ends are in Area 3

5.103 Therefore, where circuits serve sites located in different geographic markets, the circuit should be classified as being in the least competitive market, where the CLA is the most competitive, followed by HNR areas, then Area 2, and finally Area 3. Thus, a circuit between the CLA and Area 2 would be classified as being in Area 2.

¹¹⁴ BEREC, BoR (12) 126

Proposed specific remedies in the IEC markets

Requirement to provide leased lines for fibre connectivity at all bandwidths

Background

5.104 As noted above, Openreach's leased lines are active services that include the provision of electronic transmission equipment for the conveyance of signals in addition to the underlying passive infrastructure and fibre. Leased lines in the form of inter-exchange connectivity provide a service to carry aggregated end-user traffic between points of aggregation (BT exchanges) which includes connections between access areas. As with leased lines in the LL access market, BT currently provides two key forms of inter-exchange connectivity:

- Ethernet services; and
- wavelength division multiplex (WDM) services.

Our proposals

5.105 We propose to require BT to provide network access in the form of each of Ethernet and WDM leased lines at all bandwidths, including relevant ancillary services. We also propose that inter-exchange connectivity at all bandwidths in BT Only and BT+1 exchanges is subject to a charge control with prices indexed in line with inflation (CPI-0%).

Our reasoning

5.106 For the reasons set out below, we consider that our proposals are appropriate and proportionate in relation to BT's market power in the IEC markets.

Network access to IEC services

5.107 Openreach's circuits in the WLA and LL access markets have handover points at BT exchanges. Rival telecoms providers need to use Openreach's services to connect these exchanges with a competitive backhaul and/or core network. Therefore, although the volume of interexchange connectivity circuits is very low compared to volumes in the WLA and LL access markets,¹¹⁵ access to inter-exchange connectivity is an important enabler of competition in the WLA and LL access markets.

5.108 Absent regulation, BT would have the incentive and ability to refuse to provide access to its inter-exchange connectivity network or not provide access on terms that would secure efficient investment and innovation, both in the relevant wholesale markets (WLA, LL access and IEC) and the related downstream retail markets. This would result in consumer harm in the form of service degradation, restricted choice of provider and/or higher prices. We

¹¹⁵ Currently, around [] business connectivity lines across all bandwidths are provided by third-party telecoms providers using Openreach's inter-exchange connectivity, which represents [] of all Openreach leased lines in that market. We project that number to increase to [] in 2025/26, which would represent [] of all Openreach leased lines in that market.

therefore propose that BT should be required to provide network access to Ethernet and WDM leased lines at all bandwidths.

5.109 We propose to require BT to provide leased lines from all non-competitive BT exchanges. As we set out in Section 6 of Volume 2, we consider trunk links between BT exchanges and data centres, and between BT exchanges and network nodes, to be competitive. Under our proposals, therefore, BT would not be required to provide active products on these routes.

5.110 In addition to the specific access service, a number of ancillary services are necessary to enable and support the provision of inter-exchange connectivity, including as a minimum space and power, site access, cablelink, interconnect, Time-related Charges (TRCs), and any other supporting services used for installation, maintenance, modification, and ceasing of this specific access service. We propose that our specific access remedy should require BT to provide these ancillary services.

Reference Offer

5.111 We propose to retain, for the purposes of transparency, the existing specific Reference Offer requirements for Ethernet services. These would require BT to include in the Reference Offer SLAs and SLGs for the completion of the provision of service and fault repair times.

Charge controls

5.112 In Section 1 we set out our approach to pricing of wholesale services in the IEC markets. In Section 4 of Volume 4 we set out in detail the proposed design of each charge control and our justification for it.

Conclusion

5.113 In order to implement these proposals, we propose to include the requirements outlined above in the SMP Conditions 2 and 7 published at Volume 5. As set out above, Sections 87(3) 87(6)(c) to (e) of the Act provide a basis for these draft SMP conditions.

Consistency with EC Recommendations and the BEREC Common Position

5.114 We have taken utmost account of the BEREC Common Position on wholesale leased lines¹¹⁶ in arriving at our proposed conditions, including BP1 to BP3a which appear to us to be particularly relevant in this context. We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

¹¹⁶ BEREC, BoR (12) 126

Classification of circuits that cross boundaries between IEC markets

5.115 In the IEC market, we propose that circuits should be classified as set out in Table 5.5.

Table 5.5: Proposed classification of circuits that cross boundaries between IEC markets

Classification of circuit	Location of circuit ends
BT+2	Both ends are in BT+2
BT+1	Both ends are in BT+1
	One end is in BT+1 and the other in BT+2
BT Only	One or both ends are in BT Only

5.116 Therefore, where circuits serve sites located in different geographic markets, the circuit should be classified as being in the least competitive market, where the BT+2 is the most competitive, followed by BT+1 and finally BT Only. Thus, a circuit between BT+2 and BT+1 exchanges would be classified as being in the BT+1 market.

Consultation question(s)

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

6. Specific remedies: dark fibre

6.1 In this Section, we set out our proposals to impose network access obligations on Openreach requiring it to provide access to dark fibre. Dark fibre enables innovation and allows purchasers to save money on equipment costs.

6.2 Specifically, we propose to:

- introduce a requirement on Openreach to provide access to dark fibre for the supply of leased line access (LL Access) in Area 3 (we refer to this as dark fibre access); and
- re-impose a requirement on Openreach to provide access to dark fibre for the supply of inter-exchange connectivity (IEC) from BT Only exchanges with no rival networks close by (we refer to this as dark fibre inter-exchange).

6.3 For each requirement, we explain our proposals in terms of:

- why we are imposing the remedy;
- the design of the remedy;
- our approach to non-discrimination to achieve a level playing field between Openreach and other telecoms providers;
- our approach to pricing;
- specific requirements for the publication of a reference offer; and
- implementation of the remedy.¹¹⁷

6.4 We provide a summary of our proposals in the table below:

Table 6.1: Summary of our proposals

Proposal	Dark fibre access remedy	Dark fibre inter-exchange remedy
Scope of remedy	Dark fibre for the supply of leased LL Access in Area 3.	Dark fibre for the supply of inter-exchange connectivity from BT Only exchanges, where the nearest rival PCO network is more than 100m away.
Circuit configurations	Openreach is required to provide dark fibre terminating segments of the following types: <ul style="list-style-type: none"> • access segments; • access segments including a main link between exchanges; and • end-to-end access segments without a main link 	Openreach is required to provide dark fibre backhaul segments between exchanges.

¹¹⁷ As we are re-imposing a requirement for BT to provide access to dark fibre for the supply of inter-exchange connectivity, the Dark fibre inter-exchange remedy will already have been implemented by the time of our Statement.

Parity with active wholesale products	The dark fibre product to be comparable to the optical elements of the corresponding active wholesale products (i.e. EAD and EAD LA products used for access).	The dark fibre product to be comparable to the optical elements of the corresponding active wholesale products (i.e. EAD products used for inter-exchange connectivity).
Arrangements concerning provision of new infrastructure	Openreach is required to lay new access and main link fibre segments subject to reasonable limits described below.	Openreach is required to lay new main link fibre segments subject to reasonable limits described below.
One and two fibre circuits	Openreach is required to provide one and two fibre circuits.	Same as access.
Provisioning, repair and service migration processes	The provisioning, repair and service migration processes which were developed by Openreach in collaboration with industry for the dark fibre remedy considered in the 2016 BCMR should be suitable for the proposed dark fibre access remedy.	The provisioning, repair and service migration processes, developed for the dark fibre inter-exchange remedy imposed in the 2019 BCMR Statement should be suitable for the for this remedy.
Ancillary services (excluding ECCs)	Accommodation, interconnection, cablelink, and TRCs, to be provided where reasonably necessary to use dark fibre. These include cessation charges.	Same as access.
ECCs (Excess construction charges)	ECCs apply to customer specific extensions to Openreach's network which are necessary to connect to an end-user site.	Not applicable.
Non-discrimination	Where dark fibre is used by Openreach to provide active circuits downstream, we propose to exempt dark fibre from an EOI requirement. In such cases, no undue discrimination should apply. Where Openreach supplies dark fibre to BT or non-BT customers, an EOI obligation should apply.	Same as access.
Pricing	Charge control, set at cost. ECCs, where applicable.	Charge control, set at cost.

Implementation	Openreach is required to launch the dark fibre access product, including the publication of the RO, within one month of the publication of our final statement.	Openreach has already launched the dark fibre interexchange product.
QoS ¹¹⁸	QoS Standards and reporting requirements to come into effect immediately from the publication of Statement.	Same as access.

Dark fibre for Access

Aim and effect of our proposed dark fibre remedy

- 6.5 We propose to impose a specific network access remedy in the form of dark fibre in the market for leased line access in Area 3. We consider that:
- a) a dark fibre remedy is appropriate and proportionate to address BT's SMP in this market;
 - b) a dark fibre remedy is not appropriate for the market for leased line services in Area 2; and
 - c) any adverse impacts are proportionate to our overall aim.

We believe a dark fibre remedy is appropriate and proportionate

- 6.6 In Section 8 of Volume 2, we set out our provisional conclusion that as a result of BT having SMP in the provision of leased lines in Area 2, Area 3 and HNR Area, it is likely that BT would have the incentive and ability to refuse to supply access and thus restrict competition in the provision of products and services in the relevant downstream markets. We have therefore considered whether Openreach should be required to provide specific network access in the form of access to dark fibre.
- 6.7 Although historically we required Openreach to offer leased lines access circuits as an active product, the characteristics of these services were determined by choices made by Openreach and developments negotiated with the industry as a whole. Access to dark fibre would provide users with a more flexible input to downstream services. This has the potential to deliver several benefits:¹¹⁹
- users would be able to choose their own electronic equipment, enabling them to deliver services that better suit their needs and the needs of their customers;
 - users would be able to make efficient decisions on bandwidth upgrades based on the underlying costs of upgrades; and

¹¹⁸ We explain our approach to dark fibre QoS standards in Section 7.

¹¹⁹ We discuss the benefits of dark fibre and its likely take-up in more detail in Annex 13.

- users would be able to eliminate inefficient active equipment duplication;

6.8 These benefits will in turn allow telecoms providers to better compete on price, service quality, and product offering in downstream markets.¹²⁰

6.9 In light of these benefits, we propose to impose a requirement on Openreach to provide dark fibre access. We consider that the current absence of dark fibre access has the effect of hindering efficiency, innovation, and effective and sustainable competition in the corresponding downstream markets, ultimately against end-users' interests. In fact, telecoms providers have been keen to purchase dark fibre from Openreach, yet Openreach has chosen not to supply this product.¹²¹

The remedy should be limited to the market for leased line services in Area 3

6.10 In determining the appropriate geographic scope of the dark fibre remedy for this review period we have placed significant weight on our strategic objective to encourage investment in very high capacity networks. We believe that competition between different networks is the best way to drive investment in high-quality, innovative services and keep prices down.

6.11 We recognise that where dark fibre is available, it is likely to be more attractive than active services, particularly for higher bandwidth services. Accordingly, dark fibre is likely to increase incentives for telecoms providers to continue to rely on access to Openreach's network rather than build new networks themselves and/or enter into commercial arrangements with alternative network builders.

6.12 Notwithstanding the benefits, we are cautious about the geographic scope of the dark fibre remedy. We only want to impose dark fibre in areas where we believe there is unlikely to be material commercial deployment by rival networks. As such we are proposing to impose the dark fibre remedy in the leased lines access market in Area 3 only. We set out our reasoning below.

Area 3

6.13 The leased lines access market Area 3 includes those parts of the UK where we think there is unlikely to be material commercial deployment by rival networks. Therefore, we consider the risk of dark fibre undermining the deployment of rival networks is small.

6.14 Our analysis suggests that even though Area 3 comprises largely rural areas and smaller urban areas, there is significant potential leased lines demand (based on the number of large business and mobile backhaul sites). This suggests that the additional benefits from having access to dark fibre in Area 3 could be significant. The greater flexibility it offers compared to

¹²⁰ We expect telecoms providers will use dark fibre over active products where they are able to realise the benefits discussed above (i.e. cost and flexibility advantages). As the dark fibre price is significantly lower than that of a 10Gbit/s circuit and moderately lower than the price of a 1 Gbit/s, 100 Mbit/s and 10 Mbit/s circuit, we expect telecoms providers to substitute dark fibre for active circuits. We also note that there may be further benefits independent of the level of dark fibre take-up, if Openreach were to lower the price of its existing active products in order to make them more competitive with the dark fibre product.

¹²¹ We note that the OSA Filter Connect product offered by Openreach does not deliver the same benefits as dark fibre. This is discussed in more detail in Annex 13.

Openreach's active products would also allow telecoms providers to offer more similar products in Area 3 as those offered in areas where they rely on alternative networks (e.g. in Area 2 or High Network Reach areas).

6.15 In response to our March 2019 Approach to Remedies Consultation, BT, Openreach and Virgin Media challenged whether dark fibre was necessary in Area 3 given the availability of the PIA remedy. It was also argued that the PIA remedy should be allowed to bed in, and dark fibre should only be introduced if PIA has proved to be ineffective.

6.16 Although the proposed requirement on Openreach to provide unrestricted access to its ducts and poles to address its market power in the Physical Infrastructure market is central to our objective of promoting greater investment and competition in fibre networks, we do not expect the deployment of rival networks to be economic in all parts of the UK. In areas where material investment in rival networks is unlikely (i.e. Area 3), the DPA remedy is not, in our assessment, sufficient to address BT's SMP in the downstream markets. Therefore, it is appropriate to impose additional remedies to promote competition downstream based on access to Openreach's network. Given the advantages that it offers over active leased lines products, we consider that dark fibre should be the primary focus of our regulation in the leased lines access market in Area 3.

6.17 For the reasons set out above, we consider that our proposal to require Openreach to provide dark fibre access in the leased lines access market in Area 3 is appropriate and proportionate.

Area 2

6.18 The leased lines access market Area 2 includes those parts of the UK where there is already some material commercial deployment by rival MSNs to BT or where this could be economic.

6.19 As explained in Section 1 of Volume 2 and Annex 7, we have evidence of significant planned network build in Area 2, facilitated by the duct and pole access remedy we are imposing. This planned build includes networks focussed on leased lines and networks offering both broadband and leased lines.

6.20 Introducing a regulated dark fibre product now risks undermining these plans, and therefore the opportunity for network competition to emerge and become established. Given the benefits of dark fibre, existing and potential purchasers of leased lines would be more likely to rely on regulated Openreach products than consider alternatives. This would remove an important source of demand (and revenue) for telecoms providers looking to deploy rival networks.

6.21 There is evidence that large customers of Openreach's active wholesale leased line products are actively considering opportunities to source leased lines, including dark fibre, from alternative networks (including those not yet built). For example, with increasing demand for mobile data and the roll out of 5G, some MNOs are looking at alternatives to Openreach's existing products to meet their demand for higher capacity backhaul circuits to mobile sites. We also have evidence that suggests that demand from users of leased lines plays an

- important role in some business plans for rival network investment, including through acting as anchor tenants supporting a larger scale investment.
- 6.22 For telecoms providers focused on providing leased lines, this demand is obviously central to the business case for investment. Therefore, requiring Openreach to offer dark fibre would significantly undermine this investment.
- 6.23 Where operators are looking to deploy multi-service networks, we have evidence to suggest that leased lines could still play an important role in enabling the business case for investment. Building a fibre network involves a significant amount of upfront investment, and there are economies of scope (and scale) in building a network to deliver both broadband and leased lines.¹²² Using the network to generate as many different revenue streams as possible will help de-risk and improve the commercial business case for investment. Requiring Openreach to offer dark fibre will undermine rival network operators' ability to do this.
- 6.24 We also consider that requiring Openreach to significantly improve access to its network by offering dark fibre in Area 2 risks a chilling impact on investment, as it would send a signal to stakeholders, including investors, that is at odds with our strategy to reduce reliance on Openreach's network and promote network competition.
- 6.25 In response to our March consultation, some stakeholders argued that introducing a dark fibre remedy in Area 2 would generate significant benefits over the existing regulated wholesale products, and that we had not demonstrated that the costs of imposing dark fibre in Area 2 (in terms of the impact on rival network investment) outweighed these benefits.
- 6.26 We set our approach to remedies in this review in Section 1 and explain above why not imposing dark fibre in Area 2 is appropriate and proportionate. We do not consider that it is necessary for us to undertake a formal, detailed, quantitative cost-benefit analysis of the kind proposed by stakeholders in this context.
- 6.27 In any event we disagree with stakeholders that the benefits of dark fibre will outweigh the costs. We agree that dark fibre offers benefits over regulated access to active wholesale products, and that by not imposing dark fibre we forgo these benefits. However, we consider that the long-term benefits of increased network competition, supported by our proposal not to impose dark fibre, will significantly exceed the benefits of promoting competition based on regulated access to Openreach's network.
- 6.28 Therefore, we do not propose to require Openreach to offer dark fibre in Area 2.

¹²² Economies of scope exist if there are cost savings from deploying and providing multiple services jointly on a single network. Such savings typically arise from costs which are common across services and need to be incurred to service either or both, broadband and leased line customers. These economies of scope can arise from offering broadband and leased line services sharing common infrastructure, such as duct routes or fibre cables, thus the costs associated with deploying fibre in those sections are incurred only once, resulting in cost savings. See also 2018 WLA Statement, Volume 3, paragraphs 2.129-2.140.

Any adverse impacts of a dark fibre remedy in Area 3 are proportionate to our overall aim

- 6.29 We have considered the potential risks associated with implementing a dark fibre remedy in the leased lines access market in Area 3, principally raised by BT and Openreach. Our assessment is set out in Annex 13. Overall, we think any adverse impacts are proportionate to our overall aim.
- a) The impact on rival investment is low, given our proposal to limit the remedy to Area 3.
 - b) We do not think there is evidence to suggest that a flattening of the bandwidth gradient will have an adverse impact on economic efficiency. In fact, we think the remedy is likely to place downward pressure on the price of VHB active circuits resulting in prices closer to cost, which would improve efficiency.
 - c) We have considered whether the dark fibre remedy would result in an under-recovery of costs for Openreach and consider the risks to be low.
 - d) We would likely expect the dark fibre remedy to result in lower fault rates and potentially reduced costs associated with fault reduction and repair, rather than an increase in fault rates.

Design of the dark fibre access remedy

- 6.30 We propose to specify the design of the proposed dark fibre access remedy to allow for the smooth adoption of dark fibre in Area 3 across the five-year review period. In this section we discuss the key design aspects of the dark fibre remedy that will enable this. The non-price design aspects of the proposed dark fibre access remedy are summarised in Table 6.2.

Table 6.2: Summary of non-price design aspects of dark fibre for Access

Design aspect	Proposed approach
Circuit configurations	Openreach is required to provide dark fibre terminating segments of the following types: <ul style="list-style-type: none"> • access segments; • access segments including a main link between exchanges; and • end-to-end access segments without a main link.
Parity with active wholesale products	The dark fibre product to be comparable to the optical elements of the corresponding active wholesale products (i.e. EAD and EAD LA products).
Arrangements concerning provision of new infrastructure	Openreach is required to lay new access and main link fibre segments subject to reasonable limits described below.
One and two fibre circuits	Openreach is required to provide one and two fibre circuits.
Provisioning, repair and service migration processes	The provisioning, repair and service migration processes which were developed by Openreach in collaboration with industry for the dark fibre remedy considered in the 2016 BCMR should be suitable for the proposed dark fibre access remedy.
Ancillary services (excluding ECCs)	Accommodation, interconnection, cablelink, and TRCs, to be provided where reasonably necessary to use dark fibre. These include cessation charges.
ECCs (Excess construction charges)	ECCs apply to customer specific extensions to Openreach's network which are necessary to connect to an end-user site.

Circuit configurations

6.31 To ensure that purchasers of dark fibre are not at a competitive disadvantage to purchasers of active wholesale services, we consider that telecoms providers should be able to obtain dark fibre circuits in similar configurations to Openreach's current range of active products (i.e. EAD and EAD LA products). To achieve this, we propose to impose an obligation

comparable to the one imposed on Openreach for active access wholesale services, requiring Openreach to provide dark fibre terminating segments in the following configurations:

- a) access segments;
- b) access segments including a main link between exchanges;¹²³ and
- c) end-to-end access segments without a main link.¹²⁴

6.32 The obligation to provide dark fibre depends on the postcode sector of the end-user site. Given our decision on scope of the remedy, this means that where an end-user site is located in Area 3, we propose to require Openreach to provide a dark fibre circuit which terminates at that site, even if the other end of the circuit terminates at an exchange in Area 2.

6.33 We anticipate that dark fibre will be predominantly used for leased lines sold to enterprise customers, mobile and fixed access backhaul connections in the leased line access market in Area 3. However, we recognise that it is difficult to predict all of the ways in which dark fibre could be used and we are proposing not to place any usage restrictions on the remedy.

Fit with Dark fibre inter-exchange remedy

6.34 As explained later in this section, we are also proposing to impose a dark fibre remedy in the inter-exchange connectivity markets where at least one of the exchanges is BT Only and where the nearest rival PCO network is more than 100m away.

6.35 We note the possibility that CPs might attempt to use the dark fibre access remedy to circumvent restrictions in the dark fibre inter-exchange remedy. Specifically, where a route between two exchanges does not qualify for the dark fibre inter-exchange remedy, a CP could in theory circumvent this by purchasing a dark fibre equivalent of an EAD access circuit (comprising a local access component from exchange to end user site, and a “main link” component from exchange to exchange) under the dark fibre access remedy.

6.36 Allowing dark fibre to be used in this way is not the intention of the remedy, so we propose that Openreach should not be required to provide dark fibre between two exchanges as part of the dark fibre access remedy, if there is no requirement to provide dark fibre between those two exchanges as part of the dark fibre for interexchange remedy.

6.37 We consider such a scenario below and illustrate our proposed approach.

6.38 As set out in Figure 6.3, Openreach currently provides active EAD access circuits which use a main link component to route between two BT+1 exchanges before terminating at an end-user site (in Area 3). Under our proposed approach, Openreach would not be required to provide a dark fibre equivalent of this circuit (i.e. dark fibre access segments including a main link). This is because the main link component routes between two BT+1 exchanges, where

¹²³ Subject to the condition that at least one of the exchanges is BT Only (and not within 100m of a rival PCO network). This is explained in more detail below.

¹²⁴ This is intended to mirror the Ethernet Wholesale End-to-End segment requirement proposed in the leased line access market.

dark fibre inter-exchange is unavailable.¹²⁵ We propose that in this scenario Openreach would only be required to provide a dark fibre equivalent for the local access segment from exchange-end user site as shown in Figure 6.4 (i.e. dark fibre access segments). We note that a telecoms provider could still purchase an active product (from Openreach or an alternative provider) or engage in self-supply, for backhaul between the exchanges.¹²⁶

Figure 6.3: Active

EAD Access circuit configuration

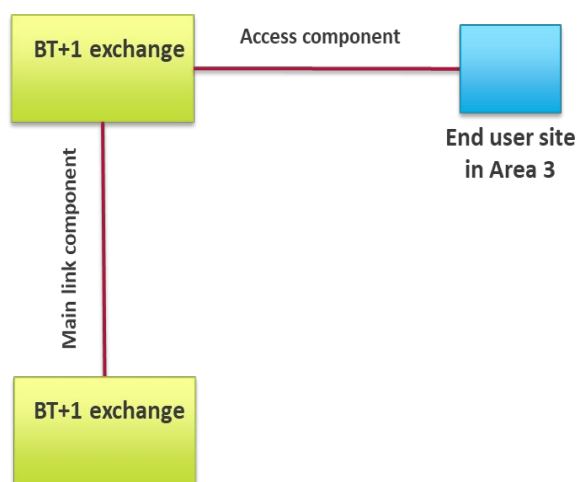
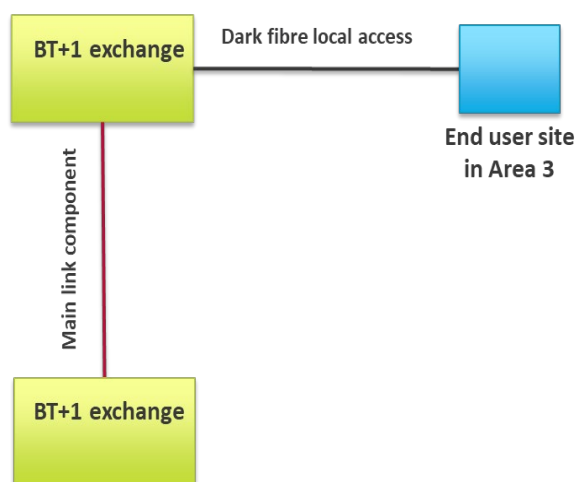


Figure 6.4: Dark Fibre

Dark fibre Access circuit configuration



6.39 We note that the instances where Openreach is not required to provide dark fibre between two exchanges within Area 3, as part of a dark fibre access circuit, are limited. Out of the 3,977 exchanges in Area 3, there are only 125 BT+1 and 16 BT+2 exchanges. Furthermore, where one of these 141 exchanges is connected to a BT Only exchange, dark fibre on that route would be available.

Parity with active wholesale products

6.40 As a starting point, we believe that the technical, operational (provisioning and repair) and commercial aspects of Openreach’s current offer of EAD and EAD LA circuits, should be used as a benchmark for establishing the arrangements applicable to dark fibre.¹²⁷ Openreach’s

¹²⁵ Note for presentational purposes we have used BT+1 exchanges in this example, however, the same is true for any combination of BT+0 exchanges (where a rival PCO is within 100m), BT+1 exchanges and BT+2 exchanges (i.e. any route where our dark fibre for inter-exchange remedy does not require BT to provide dark fibre).

¹²⁶ In this scenario, the telecoms provider would require space for equipment in the local exchange to terminate the dark fibre local access circuit and connect this to whatever backhaul connectivity solution they use. Where there is no space in the local exchange, BT will need to provide a cable link service. This is discussed in more detail in more detail in the ‘Ancillary services’ sub-section below.

¹²⁷ We note that the 2019 BCMR also used EAD circuits as a benchmark for BT’s dark fibre inter-exchange product.

EAD products provide a range of connectivity options which fulfil telecoms providers' access requirements and Openreach's processes for providing those active products should therefore be capable of adaptation to include the provision of dark fibre.¹²⁸

- 6.41 We believe that by basing the dark fibre remedy directly on EAD products, telecoms providers will be able to replicate the types of connectivity they currently offer over active products. We also note that these EAD products are Openreach's primary product for providing connectivity in the leased line access markets.
- 6.42 In line with EAD products, we also propose to include a distance limit for reasons of quality assurance and product safety. We have decided that a route distance of up to 86km (applied for the safe use of EAD services) should be appropriate.
- 6.43 We note that a radial distance limit of 45km is often used by Openreach as a proxy for route distances based on the technology to light dark fibre. We are not proposing to stipulate a radial distance limit in our regulation. While the 45km radial distance limit may be useful when considering systems developments and the initial filtering of dark fibre orders, Openreach must take steps to ensure dark fibre can be used for routes not exceeding the 86km route distance limit but greater than the 45km radial distance used for EAD services.

Arrangements concerning provision of new infrastructure

- 6.44 As explained above, we are proposing to impose a specific network access requirement on Openreach to provide dark fibre access. Our power to impose such an obligation extends to requiring Openreach to make adjustments to its existing network to make dark fibre available, provided these are based on the problem identified, proportionate and justified in light of the objectives set out in Article 8(1) of the Framework Directive.¹²⁹
- 6.45 In light of the requirement that the obligation be proportionate, and the fact that what is necessary is likely to depend on the specific circumstances of any case, we do not believe it is appropriate to set prescriptive rules in the SMP condition covering every circumstance. In our view, this would carry risk of regulatory failure. We have therefore decided to supplement the specific requirement to provide dark fibre access with the following guidance on when this obligation would apply in cases involving the provision of new fibre infrastructure.
- 6.46 We consider that the following three criteria¹³⁰ should be applied to determine whether a particular adjustment to Openreach's network falls within the scope of its dark fibre obligation:

¹²⁸ However, we do acknowledge that the operation of BT's dark fibre products will differ from Ethernet products in some respects.

¹²⁹ Judgment of 19 June 2014, TDC A/S v Teleklagenævnet C-556/12, EU:C:2014:2009.

¹³⁰ These criteria take in to account the factors set out in section 87(4) of the Act. Section 87(4) also requires us to take into account the investment made by the person initially providing or making available the network or other facility in respect of which an entitlement to network access is proposed. As explained below, Openreach can apply ECCs for network adjustments which are specific to an individual customer. For network adjustments in common parts of Openreach's network, the costs are capitalised and recovered from connection and rental charges for multiple services over time (see Section 6 of Volume 4).

- a) **Is the requested adjustment necessary?** This criterion considers the narrow question of whether an alternative option exists which would render the requested adjustment unnecessary, provided this alternative allows for a reasonably equivalent outcome for the telecoms provider compared to making an adjustment.
- b) **Is the requested adjustment feasible?** This criterion considers whether there are barriers that prevent Openreach from being able to make the required adjustment.
- c) **Does the requested adjustment improve efficiency?** This criterion considers whether the requested adjustment promotes efficiency and is therefore consistent with the rationale for requiring Openreach to provide dark fibre (i.e. to unlock the efficiencies from dark fibre).

6.47 We have considered how these criteria might apply to likely scenarios which would require a degree of adjustment in order to provide a dark fibre access segment. We consider scenarios where an adjustment would be required to provide dark fibre between two exchanges as part of a dark fibre access circuit in the context of the dark fibre interexchange remedy later on in this section.

6.48 Given the ubiquity of Openreach's network, Openreach is likely to have duct and fibre along part, if not all, of the route from an exchange to a premises. However, the following two scenarios could arise along part of the route:

- a) Scenario 1: there is duct, but no fibre (either at all, or there is fibre but it is fully used).
- b) Scenario 2: there is no duct.

6.49 In both scenarios, we consider that the dark fibre access obligation will require Openreach to lay new fibre and/or duct in certain circumstances. The three criteria set out above should be used to identify those circumstances.

- a) In relation to the first criterion, the relevant factors may include: whether there is an alternative route that Openreach could provide dark fibre along; whether it would be possible to aggregate traffic onto fewer fibres in order to free up fibre capacity; and whether the requesting operator could lay its own fibre using the PIA remedy (subject to our guidance in relation to the third criterion set out below);
- b) In relation to the second criterion, the relevant factors may include whether there are any technical, operational or legal barriers that prevent Openreach from laying the new fibre and/or duct (e.g. distance limits when installing fibre; traffic management or planning restrictions which make the laying of new fibre unfeasible);
- c) In relation to the third criterion, the comparison should be between what Openreach would need to do to provide the requested dark fibre, and what a telecoms provider would need to do if it were to lay its own fibre using the PIA remedy.¹³¹ Where there are differences which mean Openreach can provide dark fibre more efficiently (for example,

¹³¹ In this comparison, Openreach should consider the incremental cost it faces in making the adjustment. For example, if Openreach would have carried out the work anyway, even if the telecoms provider had not requested the adjustment, the incremental cost will be lower.

it may be quicker, easier and/or cheaper), it would be required to lay new fibre under the dark fibre access obligation.

- 6.50 Under the third criterion, in comparing what Openreach and a telecoms provider would need to do to provide fibre connectivity from an exchange to a premises, we note that the specific dark fibre access remedy we are imposing only requires Openreach to offer dark fibre access segments between an exchange and a premises; it does not require Openreach to offer intermediate segments of dark fibre where it is available.¹³² If Openreach only offers the specific form of dark fibre we are requiring, this means the following for the two scenarios above:
- a) in the first scenario (there is duct, but no fibre), other providers laying their own fibre using the PIA remedy would need to lay fibre over the entire route in order to provide connectivity from an exchange to a premises. Openreach would only need to lay fibre for sections of a route where fibre is unavailable.
 - b) In the second scenario (no duct), other providers laying their own fibre using the PIA remedy would need to install their own duct where there no duct available, and then lay fibre over the entire route in order to provide connectivity from an exchange to a premises. Openreach would need to install duct where there is no duct available, but would only need to lay fibre for sections of a route where fibre is unavailable.
- 6.51 In both scenarios, it is likely that Openreach can meet the request in a more efficient manner.¹³³
- 6.52 Therefore, in practice, we expect that in most circumstances the same arrangements will apply for dark fibre as apply for active leased lines (where Openreach provides a service to any location upon reasonable request, including locations that are not currently connected to its fibre network).¹³⁴

One and two fibre circuits

- 6.53 To ensure that purchasers of dark fibre are not at a competitive disadvantage to purchasers of active wholesale services, we consider that telecoms providers should be able to obtain dark fibre circuits in similar configurations to Openreach's current range of active services. On this basis, we propose to require Openreach to provide one or two fibre circuits.

¹³² If such intermediate segments were available, a telecoms provider could in theory connect these to their own fibre where Openreach does not have fibre available.

¹³³ Even where Openreach is required to lay new fibre over an entire route between an exchange and a premises, Openreach benefits from existing economies of scale and scope in fibre deployment enabling it to install fibre at a lower cost than alternative network builders. For example, Openreach has the ability to gain efficiencies by aggregating fibres from multiple customers and across multiple services. As Openreach supply a much higher volume of circuits in Area 3 compared to alternative network operators, its ability to do this far exceeds the ability of other telecoms providers.

¹³⁴ Where the arrangements differ, telecoms providers could request an active circuit from Openreach, with the intention of migrating this to dark fibre at the end of the minimum contract period.

Provisioning, repair and service migration processes

- 6.54 The provisioning, repair and service migration processes were developed by Openreach in collaboration with telecoms providers during the implementation process for the dark fibre remedy imposed in the 2016 BCMR. The processes were specified in Openreach's dark fibre Reference Offer.
- 6.55 The provisioning processes for the dark fibre product that Openreach has developed are the same as those of the corresponding active products in most respects. The main differences are that Openreach would not provide active equipment and would undertake a precision test to measure circuit performance parameters.
- 6.56 The fault repair processes are necessarily different to the corresponding active products because telecoms providers, rather than Openreach, would be operating the network equipment which facilitates monitoring and fault diagnosis. Telecoms providers are therefore required to take greater responsibility for dispatch of Openreach technicians to repair fibre faults. We note that for the 2019 BCMR, Openreach proposed to levy a Right When Tested (RWT) charge for abortive fault repair visits above a threshold judged to be consistent with efficient remote fault diagnosis. We consider this approach to be sensible.

Ancillary services

- 6.57 In addition to this specific access obligation, a number of ancillary services are necessary to enable and support the provision of dark fibre access, including as a minimum: space and power, site access, cable link, interconnect, ECCs, TRCs, and any other supporting services used for installation, maintenance, modification, and ceasing of this specific access service. We propose that our specific access obligation should require Openreach to provide these ancillary services.
- 6.58 In addition to the ancillaries listed above, we note the following ancillaries that are key to the provision of the dark fibre specific access obligation.

Cablelink

- 6.59 In addition to internal and external cable link variants, we are proposing that an external cablelink may be connected directly to a dark fibre service (both access and inter-exchange) that terminates within the exchange but only where space and power within an exchange is not available, and where it is reasonable and feasible to do so. This proposal is necessary to enable the effective use of the proposed regulated dark fibre remedies in situations where the building of new accommodation space and power may be inefficient. We consider this proposal is consistent with the provision of copper tie cables which run from the MDF directly to an external handover point (such as Openreach Distant Location service) and the delivery of an external cablelink.

Cessation

- 6.60 We consider it necessary to propose a separate cessation activity and associated charge which is applied to customers who cease use of dark fibre prior to the end of a contract. This dark fibre cessation charge is to allow Openreach to recover its costs as a result of requiring

engineering call-outs which is different from active circuits which can be ceased remotely and therefore do not incur a specific TRC. The approach to these dark fibre cease charges are set out in more detail in Section 6 of Volume 4.

ECCs

- 6.61 As for active leased lines, we propose that ECCs apply to a dark fibre access circuit. ECCs are necessary to enable the provision of an access leased line requested by a telecoms provider and are specific to an individual customer at an end-user site. This generally equates to fibre between a nearby fibre flexibility point and the customer's premises.
- 6.62 For clarity, the charges for excess construction are only charged once a particular threshold is reached, with the charges below the threshold being included (and spread across) the connection charge (see Volume 4).

Conclusion

- 6.63 We consider that the proposed dark fibre network access requirement in the leased lines access market is proportionate in that it is addressing the market power that we have provisionally found BT holds.
- 6.64 To give effect to the above proposals, we propose to set the SMP Conditions 2 and 7 at Volume 5 requiring Openreach to provide dark fibre access in the leased lines access market. As set out in Section 3, Sections 87(3) and 87(6)(c) to (e) of the Act provide a basis to set these SMP conditions.

Non-discrimination

- 6.65 Our proposals on non-discrimination which apply to all forms of network access are set out fully in Section 3. Where dark fibre is used by Openreach to provide active circuits downstream, we propose to exempt dark fibre from the proposed EOI requirement. In other words, where it is provisioning active circuits, Openreach would not have to consume the dark fibre input from itself on an EOI basis. Instead, in such cases the proposed no undue discrimination requirement would apply.
- 6.66 We propose to interpret this no undue discrimination requirement to mean that Openreach should not favour its support for its own active products over the provision of dark fibre to other telecoms providers.
- 6.67 For example, the allocation of available dark fibre between Openreach's active product use and provisioning of dark fibre circuits to other telecoms providers should not be unduly discriminatory. Accordingly, if there is limited amount of dark fibre available in a given route, Openreach should not unduly prioritise the provisioning of its own active services over the provisioning of dark fibre to other telecoms providers.
- 6.68 As per Section 3, where Openreach supplies dark fibre to BT downstream or to non-BT customers, we propose that an EOI obligation should apply.

Pricing of the dark fibre access remedy

Aim and effect of regulation

6.69 For dark fibre access circuits between relevant sites, given we provisionally find BT to have SMP in leased line access, we propose that BT has the incentive and the ability to fix and maintain dark fibre access prices in Area 3 at an excessively high level so as to have adverse consequences for end-users. Excessive prices at the wholesale level could make it difficult for other providers to compete at the retail level with BT and may result in market exit. Excessively high wholesale charges are also likely to result in high retail prices, i.e. consumers would be paying more for a service than they should expect if wholesale prices were constrained by effective competition.

Our proposals

6.70 We propose to impose a charge control on the provision of dark fibre access to address this risk of excessive pricing.

6.71 In principle, we could adopt either a cost-based or active-minus approach when setting a charge control. By cost-based we mean a charge control that is set with reference to the underlying costs of providing an access circuit. By active-minus we mean a charge control that is set with reference to the price of an active circuit, adjusted to reflect differences in the cost of providing a dark fibre access circuit.

6.72 We propose to set a cost-based charge control for the dark fibre access remedy. We consider that over time dark fibre will become the primary remedy to BT's SMP in Area 3 and pricing it at cost is the best way to achieve this. We believe an active-minus charge control would be inappropriate as it would result in a higher dark fibre price which would limit the take up and associated benefits of the remedy accordingly.¹³⁵ The charge control will therefore be referenced to the relevant components of BT's underlying passive infrastructure necessary for access connections.

6.73 Our proposed remedy requires variants of dark fibre that directly mirror the existing active access products. We propose that the pricing structure of the dark fibre variants should also mirror the pricing structure of the access variants:

- dark fibre local access will be priced according to a fixed charge and will not vary by distance.
- the 'main link' component of dark fibre will be priced according to a distance related charge.

¹³⁵ As the dark fibre remedy will only be available in Area 3, where there is no existing multi-service network competition and the likelihood of significant additional competition is low, we also consider that a price premium to incentivise rival investment would be inappropriate.

- 6.74 For access circuits that consist of inter-exchange and access segments, we propose that users pay a charge for the connection and rental costs associated with the access segment, and a distance-based main link charge for the inter-exchange segment. Users would not pay the connection charge and fixed rental charge that would otherwise apply when purchasing inter-exchange dark fibre on its own.¹³⁶
- 6.75 We are also proposing that the regulation of existing active products is maintained on a safeguard basis (i.e. inflation adjusted prices from 2021 levels) as we recognise that industry will take time to adjust as services transition to dark fibre. Accordingly, the proposed dark fibre price is lower than active circuit prices, particularly for VHB services.
- 6.76 Our detailed proposals for setting the charge control on dark fibre, including the choice of cost standard, estimation of relevant costs, pricing of ancillary services, and satisfaction of the applicable pricing legal tests, is discussed in detail in Volume 4 of this consultation.

Reference offer for the dark fibre access remedy

- 6.77 We propose that BT should be required to publish a Reference Offer (RO) for dark fibre access in the leased lines access market in Area 3, taking into account the proposed general requirements in Section 3. SLAs and SLGs for the completion of the provision of service and fault repair times should be agreed and finalised as part of industry negotiations regarding product specification within this RO. We note that following the publication of the 2016 BCMR, industry worked with BT for 15 months to develop the technical and operational aspects of the dark fibre product. This included a dark fibre RO, which BT published in December 2016. We expect the RO published for dark fibre access in the leased line access market in Area 3 will be very similar to what was previously published for the 2016 BCMR.¹³⁷
- 6.78 We also propose that the RO for dark fibre must set out an explanation of any differences between the provision of dark fibre services and the same associated services that apply to the relevant reference product. This is intended to offer transparency within the RO and help achieve parity between dark fibre access and wholesale active services. Such transparency in the RO will also assist the monitoring of anti-competitive behaviour and provide visibility to the terms and conditions on which other providers will purchase dark fibre services.
- 6.79 To give effect to this proposal, we propose to set SMP Condition 7 at Volume 5 requiring BT to provide a reference offer for dark fibre access in the leased lines access market. As set out in Section 3, sections 87(6)(c) to (e) authorise the setting of SMP services conditions in relation to the Reference Offer.

Implementation of the dark fibre access remedy

- 6.80 In this section we set out our proposed timetable for implementation obligations for dark fibre access circuits in Area 3, as summarised in Table 6.3 below.

¹³⁶ Where a telecoms provider is purchasing a circuit which has two local access tails, they would be charged two connection and rental charges for dark fibre local access, plus a distance-based main link charge if the circuit routes between exchanges.

¹³⁷ We set out the specific requirements for the RO at Condition 7 in Volume 5.

Table 6.3: Summary of the proposed dark fibre remedy implementation obligations

Obligation	Summary
Reference Offer	<ul style="list-style-type: none"> Specified minimum requirements for the reference offer; SLAs and SLGs to be agreed and finalised as part of industry negotiations regarding product specification within the RO; Publish a RO within one month of the date of the publication of the final Statement; and SLAs and SLGs to enter into force from day one of the launch of dark fibre access.
Launch	<ul style="list-style-type: none"> Launch dark fibre access within one month of the date of the publication of the final Statement.
Quality of Service¹³⁸	<ul style="list-style-type: none"> QoS standards apply from year one of the market review; Key Performance Indicators (KPIs) defined in Direction; Reporting requirements to come into effect immediately from launch (i.e. within one month of the date of the publication of the final Statement).

6.81 As noted above, Openreach published a dark fibre RO in December 2016 following the publication of the 2016 BCMR. We do not consider it necessary for Openreach to make significant amendments to the dark fibre product to reflect its implementation in the leased lines access market. Furthermore, we note that Openreach has experience in launching a dark fibre product, having already done so for the inter-exchange market following the 2019 BCMR.

6.82 We therefore propose that BT should be required to launch the dark fibre product, including the publication of the RO, within one month of the publication of our final statement. SLAs and SLGs for the completion of provision of service and fault repair times are required to form part of this RO are to be agreed and finalised as part of industry negotiations regarding product specification within this RO. These SLAs and SLGs are required to then enter into force from day one of the launch of dark fibre access.

Dark fibre for inter-exchange connectivity

6.83 In this section we set out our proposed approach for a separate dark fibre remedy in the inter-exchange connectivity markets. In June 2019 we published the 2019 BCMR Statement and introduced a requirement for BT to provide access to dark fibre, on reasonable request, for inter-exchange connectivity circuits from certain BT Only exchanges. Our provisional market analysis indicates that BT continues to have SMP in the inter-exchange connectivity markets and we consider that it is appropriate to continue with the regulation imposed in

¹³⁸ We explain our approach to dark fibre QoS standards in Section 7.

the 2019 BCMR. We therefore propose to require Openreach to provide specific network access in the form of access to dark fibre in the inter-exchange access market.

Aim and effect

We believe a dark fibre inter-exchange remedy is appropriate and proportionate

- 6.84 Given our provisional conclusion that BT has SMP in the provision of inter-exchange connectivity at each BT Only exchange across the UK, it is likely that BT would have the incentive and ability to refuse to supply access and thus restrict competition in the provision of products and services in the relevant downstream markets. To address this, we propose to re-impose the requirement on Openreach to provide specific network access in the form of access to dark fibre.
- 6.85 A dark fibre remedy in inter-exchange connectivity could significantly reduce costs and, in areas where investment is unlikely, is a more effective way of addressing our competition concerns than active remedies alone. It could therefore promote competition, not only in the provision of connectivity between exchanges where there are no or insufficient competitive networks but also by acting as an enabler for infrastructure build in marginal access areas, as backhaul and core costs are a consideration when building new access networks.
- 6.86 Access to dark fibre for inter-exchange connectivity would provide users with a more flexible input to downstream services, leading to the same advantages as the ones discussed above for dark fibre access.¹³⁹ Given these advantages – namely a lower price and improvements in flexibility – we believe there are incentives to purchase dark fibre in a number of cases and we would expect a material volume of dark fibre inter-exchange circuits to be purchased over the review period.

The remedy should be limited to BT Only exchanges which are not within 100m of a rival PCO

- 6.87 In the 2019 BCMR Statement, we limited the scope of the remedy to apply only to BT Only exchanges which are not within 100m of a rival Principal Core Operator (PCO) network.¹⁴⁰ This reflected our considering of the potential impact on investment of a dark fibre remedy at BT Only exchanges where rival infrastructure is close.
- 6.88 We propose to introduce the same requirement, and limit the scope in the same way for this review.
- 6.89 As the remedy will only apply to routes from BT Only exchanges without close rival infrastructure, there will be no impact on existing investment undertaken by other PCOs. Nonetheless, we note it could still have an impact on future investment by PCOs with

¹³⁹ See Annex 13 for a more detailed discussion of the benefits, as well as the expected take-up of the remedy.

¹⁴⁰ We defined PCOs as telecoms providers that own their own infrastructure, have a substantial footprint and have the capacity to offer a wholesale inter-exchange connectivity service to other telecoms providers.

network further from an exchange, as it would lead to lower prices for services between BT exchanges and thereby deter rivals from:

- connecting to a BT exchange to provide backhaul services; and/or
- investing in competing routes to backhaul traffic.

6.90 However, we consider that the incentives to connect to a BT Only exchange are strongest where rival networks are close and where there is material demand for backhaul. Accordingly, applying a distance-based exclusion ensures that dark fibre is only made available at exchanges where there are no rival PCO networks close by and investment is unlikely.

6.91 Currently, this approach means that BT is required to make dark fibre available at 3,703 exchanges out of a total of 5,573 exchanges.¹⁴¹

6.92 For the reasons set out above, we consider that our proposal to require Openreach to provide dark fibre at BT Only exchanges in the inter-exchange connectivity market is appropriate and proportionate.

Any adverse impacts of a dark fibre remedy in Area 3 are proportionate to our overall aim

6.93 We believe that the potential adverse impacts of dark fibre inter-exchange (which are similar to those discussed above for dark fibre access) are proportionate to our overall aim.¹⁴²

Design of the dark fibre inter-exchange remedy

6.94 The design and supporting rationale for many of the aspects of the dark fibre inter-exchange remedy are the same for the dark fibre access remedy. However, we note that for certain design aspects there are differences. We summarise in Table 6.4 the non-price design aspects for dark fibre inter-exchange and indicate how these compare to the dark fibre access remedy imposed in the leased lines access market. We then go on to discuss certain aspects in more detail.

Table 6.4: Summary of 2019 BCMR non-price design aspects of dark fibre inter-exchange

Design aspect	Equivalent to dark fibre access?	Summary of dark fibre inter-exchange
Circuit configurations	No	BT to provide dark fibre backhaul segments from BT Only exchanges where the nearest rival PCO network is more than

¹⁴¹ This is based on the approach used for the BCMR 2019. We propose to update this during the course of next year using the same approach. This will confirm the classification each of the 5,573 exchanges as BT Only, BT+1 or BT+2 based on the direct and indirect presence of PCOs for the 2021 Access Review Statement. We will also update our network reach analysis, using the same approach as was used for the 2019 BCMR, to confirm those BT Only exchanges which are not within 100m of a rival network.

¹⁴² See Annex 13 for a more detailed discussion of the benefits and adverse impacts of dark fibre, as well as the expected take-up of the remedy.

		100m away. Access for inter-exchange connectivity to BT Only exchanges is required where the requesting telecoms provider is present (or intends to become present) for the purpose of providing wholesale access to businesses from that exchange.
Parity with active wholesale products	Yes ¹⁴³	Dark fibre product to be comparable to the optical elements of the corresponding active wholesale products (i.e. EAD). Dark fibre to have a route distance limit of 86km.
Arrangements concerning provision of new infrastructure	No ¹⁴⁴	Openreach is required to lay new main link fibre segments subject to reasonable limits described below.
One and two fibre circuits	Yes ¹⁴⁵	BT to provide one and two fibre circuits.
Provisioning, repair and service migration processes	No	The provisioning, repair and service migration processes, developed for the dark fibre inter-exchange remedy imposed in the 2019 BCMR Statement, should be suitable for this remedy.
Ancillary services – excluding ECCs	Yes ¹⁴⁶	Accommodation, interconnection, cablelink, and TRCs, to be provided where reasonably necessary to use dark fibre. These include cessation charges.
ECCs	No	Not applicable.

Circuit configurations

- 6.95 To ensure that purchasers of dark fibre are not at a competitive disadvantage to purchasers of active wholesale services, we consider that telecoms providers should be able to obtain dark fibre circuits in similar configurations to Openreach’s current range of active services. We propose that Openreach is required to provide backhaul segments of dark fibre from BT Only exchanges where the nearest rival PCO network is more than 100m away.
- 6.96 We consider that dark fibre inter-exchange should be required where the requesting telecoms provider is present (or intends to become present) for the purpose of providing wholesale access to businesses from a BT only exchange. Where the requesting telecoms provider has no such presence or intention, we do not think that the provision of dark fibre should be required unless there is a clear purpose for establishing the route using dark fibre

¹⁴³ See sub-section ‘parity with active wholesale products’ for the dark fibre access remedy for more detail and supporting rationale.

¹⁴⁴ Note that the 3 criteria we use to assess whether a particular adjustment to BT’s network falls within the scope of its obligation are the same for dark fibre access and dark fibre inter-exchange. However, the application of these criteria is specific to each remedy.

¹⁴⁵ See sub-section ‘One and two fibre circuits’ for the dark fibre access remedy for more detail and supporting rationale.

¹⁴⁶ See sub-section ‘Ancillary services’ for the dark fibre access remedy for more detail and supporting rationale.

which requires the telecoms provider to be present at that exchange (e.g. for the aggregation of non-leased line access circuits).

Arrangements concerning provision of new infrastructure

6.97 As with dark fibre access in the leased line market, we do not believe it is appropriate to set prescriptive rules in the SMP condition covering every circumstance. In our view, this would carry risk of regulatory failure. We therefore decided to supplement the specific requirement to provide dark fibre access with the following guidance on when the obligation would apply in cases involving the provision of new fibre infrastructure.

6.98 We consider that, as for the dark fibre access remedy, the following three criteria¹⁴⁷ should be applied, to determine whether a particular adjustment to Openreach's network falls within the scope of its dark fibre obligation:

- a) **Is the requested adjustment necessary?** This criterion considers the narrow question of whether an alternative option exists which would render the requested adjustment unnecessary, provided this alternative allows for a reasonably equivalent outcome for the telecoms provider compared to making an adjustment.
- b) **Is the requested adjustment feasible?** This criterion considers whether there are barriers that prevent Openreach from being able to make the required adjustment.
- c) **Does the requested adjustment improve efficiency?** This criterion considers whether the requested adjustment promotes efficiency and is therefore consistent with the rationale for requiring Openreach to provide dark fibre (i.e. to unlock the efficiencies from dark fibre).

6.99 We consider that in scenarios where this is duct with capacity, but no fibre, or there is duct with capacity but no spare fibre, the dark fibre interexchange obligation requires Openreach to lay new fibre in certain circumstances. The three criteria set out above are used to identify those circumstances.

- a) In relation to the first criterion, the relevant factors may include: whether there is an alternative route between the two exchanges that Openreach could provide dark fibre along; whether it would be possible to aggregate traffic between the two exchanges onto fewer fibres in order to free up fibre capacity; and whether the requesting operator could lay its own fibre using the PIA remedy (subject to our guidance in relation to the third criterion set out below);
- b) In relation to the second criterion, the relevant factors may include whether there are any technical, operational or legal barriers that prevent Openreach from laying the new

¹⁴⁷ These criteria take in to account the factors set out in section 87(4) of the Act. Section 87(4) also requires us to take into account the investment made by the person initially providing or making available the network or other facility in respect of which an entitlement to network access is proposed. For network adjustments in common parts of Openreach's network, the costs are capitalised and recovered from connection and rental charges for multiple services over time (see Section 6 of Volume 4).

fibre (e.g. distance limits when installing fibre; traffic management or planning restrictions which make the laying of new fibre unfeasible);

- c) In relation to the third criterion, the comparison should be between what Openreach would need to do to provide the requested dark fibre between two exchanges, and what a telecoms provider would need to do if it were to lay its own fibre using the PIA remedy. Where there are differences which mean Openreach can provide dark fibre more efficiently (for example, it may be quicker, easier and/or cheaper), it would be required to lay new fibre under the dark fibre inter-exchange obligation. For example, in circumstances where Openreach would need to lay fibre for sections of a route where fibre is exhausted, but other providers would need to lay fibre over the complete route, it is likely that Openreach can meet the request in a more efficient manner.

6.100 In the scenario where there is no direct duct between two BT exchanges, in our guidance in the 2019 BCMR, we said that we did not consider that the dark fibre interexchange obligation extends to building new duct. However, we now consider that there may be circumstances where Openreach would be required to lay new duct.¹⁴⁸ The three criteria set out above are used to identify those circumstances:

- a) In line with the first criterion set out above, Openreach should consider all alternative options recognising our guidance on distance limits. If the radial and route distances permit a route via other BT exchanges, this alternative route should be offered to the requesting provider.
- b) In relation to the second criterion, the points above apply equally to this scenario.
- c) In relation to the third criterion, as set out above in relation to dark fibre access, in circumstances where Openreach would need to lay fibre for sections of a route where fibre is exhausted, but other providers would need to lay fibre over the complete route, it is likely that Openreach can meet the request in a more efficient manner.¹⁴⁹

Provisioning, repair and service migration processes

6.101 The provisioning, repair and service migration processes, developed for the dark fibre inter-exchange remedy imposed in the 2019 BCMR Statement, should be suitable for this remedy.

Ancillary services

6.102 In addition to this specific access obligation, a number of ancillary services are necessary to enable and support the provision of dark fibre inter-exchange, including as a minimum; space and power, site access, cable link, interconnect, TRCs, and any other supporting services used for installation, maintenance, modification, and ceasing of this specific service. We propose that our specific access obligation should require Openreach to provide these ancillary services.

¹⁴⁸ In practice, we consider that this scenario (no duct between exchanges) seems unlikely.

¹⁴⁹ See sub-section 'Arrangements concerning provision of new infrastructure' for the dark fibre access remedy for more detail.

- 6.103 However, we note that unlike the dark fibre access remedy, we do not consider ECCs to be required for dark fibre inter-exchange. As described earlier, ECCs are necessary to enable the provision of an access leased line requested by a telecoms provider and are specific to an individual customer at an end-user site. This generally equates to fibre between a nearby fibre flexibility point and the customer's premises. As such, these are therefore not applicable to inter-exchange circuits or the main link of an access circuit.

Conclusion

- 6.104 We consider that the proposed dark fibre network access requirement in the inter exchange connectivity markets is proportionate in that it is addressing the market power that we have provisionally found BT holds.
- 6.105 Following on from the above, to give effect to the above proposals, we propose to set the SMP Condition 2 at Volume 5 requiring BT to provide dark fibre access in the inter-exchange access markets. As set out in Section 3, Section 87(3) of the Act authorises Ofcom to impose network access requirements.

Non-discrimination

- 6.106 We propose to use the same non-discrimination approach for dark fibre inter-exchange, as stated above for dark fibre access. This means that where dark fibre is used by Openreach to provide active circuits downstream, we propose that the proposed no-undue discrimination obligation should apply. However, were Openreach supplies dark fibre inter-exchange to BT or non-BT customers, we propose that the proposed EOI obligation should apply. Our proposals on non-discrimination, which apply to all forms of network access, are set out fully in Section 3.

Pricing of the dark fibre inter-exchange remedy

- 6.107 We consider that for inter-exchange circuits between relevant sites where BT has SMP, it has the incentive and the ability to fix and maintain dark fibre inter-exchange prices at an excessively high level so as to have adverse consequences for end-users. Excessive prices at the wholesale level could make it difficult for other providers to compete at the retail level with BT and may result in market exit. Excessively high wholesale charges are also likely to result in high retail prices, i.e. consumers would be paying more for a service than they should expect if wholesale prices were constrained by effective competition.
- 6.108 We consider that over time dark fibre inter-exchange will become the primary remedy to BT's SMP at BT Only exchanges and pricing it at cost is the best way to achieve this. We believe that the price of dark fibre inter-exchange should be set using a cost-based charge control with reference to the relevant components of BT's underlying passive infrastructure necessary for connections between exchanges. This includes the relevant forward looking incremental costs incurred by Openreach in providing dark fibre inter-exchange services plus some mark-up to allow for the recovery of common costs.

6.109 Our detailed proposals for setting the charge control on dark fibre access in the inter-exchange market are discussed in detail in volume 4 of this consultation.

Reference offer for the dark fibre inter-exchange remedy

6.110 We propose that BT should be required to publish a Reference Offer (RO) for dark fibre access in the inter-exchange market, taking into account the proposed general requirements in Section 3. The RO should include SLAs and SLGs for the completion of the provision of service and fault repair times.

6.111 To give effect to this proposal, we propose to set the SMP Condition 7 at Volume 5 requiring BT to provide a reference offer for dark fibre access in the inter-exchange access market. As set out in Section 3, sections 87(6)(c) to (e) authorise the setting of SMP services conditions in relation to the Reference Offer.

Consultation question(s)

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.

7. Quality of Service

7.1 This section sets out our proposals on the quality of service (QoS) remedies for the physical infrastructure, wholesale local access, leased lines access and inter-exchange connectivity markets in which we have identified BT as having SMP.

Summary of proposals

7.2 We are proposing:

- a) An SMP condition which requires BT to comply with any QoS standards and reporting requirements as Ofcom may direct, in relation to each market identified above.
- b) Directions requiring BT to meet certain specified QoS standards in the wholesale local access, leased lines access and inter-exchange connectivity markets.
- c) Directions requiring Openreach to provide data in relation to specified Key Performance Indicators (KPIs) on the delivery of specified services in the wholesale local access, leased lines access and inter-exchange connectivity markets.

7.3 While we propose to set broadly similar QoS standards to those currently imposed in the wholesale local access, leased lines access and inter-exchange access markets¹⁵⁰, we are proposing some changes to the existing set of services covered to ensure that these standards remain reasonably representative of the service set taken by Openreach customers.

7.4 At this time, we are not proposing to set any standards for FTTP or PIA products but propose to continue to monitor Openreach's progress on the delivery of these products and, if appropriate, intervene. Nor are we proposing to set any QoS standards in the physical infrastructure market at this time.

Our Proposals

7.5 We propose to impose an SMP condition requiring BT to comply with any QoS standard and reporting requirement we may direct in relation to network access it provides in each of the following product markets – physical infrastructure, wholesale local access (Areas 2 and 3), leased lines access (HNR, Areas 2 and 3) and inter-exchange connectivity.

7.6 Further, in each of the wholesale local access (Areas 2 and 3), leased lines access (Areas 2 and 3) and the inter-exchange connectivity markets, we propose directing BT to meet certain specified QoS standards.¹⁵¹ We propose that these QoS standards are set broadly at the

¹⁵⁰ That is those minimum standards set in 2019 BCMR Statement and 2018 WLA QoS Statements. Ofcom, 2019. [Statement: Business Connectivity Market Review](#). (2019 BCMR). [accessed 13 November 2019] Ofcom, 2018. [Statement: Quality of Service for WLR, MPF and GEA](#). [accessed 12 December 2019]

¹⁵¹ See point 7.42; With a limited exception for leased lines in the HNR areas.

level of existing QoS standards currently imposed in the corresponding wholesale local access and leased lines markets. Compliance will be measured across the combined areas in aggregate.

- 7.7 The effect of these proposals is that these QoS standards will apply to the following products: MPF¹⁵², GEA-FTTC¹⁵³, all EAD (including EAD LA), EBD, Cablelink and Dark Fibre (and variants or replacements of these products). The standards we propose to impose are set out below in Table 7.1.

Table 7.1: Proposed QoS standards

WLA market : MPF and GEA-FTTC products	QoS Level (adjusted for <i>force majeure</i>)
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 <i>force majeure</i>)
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%

- 7.8 We are also proposing to direct BT in each of the wholesale local access (geographic areas 2 and 3), leased lines (geographic areas 2 and 3) and inter-exchange connectivity markets to provide data in relation to broadly the same KPIs on the delivery of specified services levels as are currently imposed in the corresponding wholesale local access, leased lines and inter-exchange markets.

¹⁵² SOTAP products should be aggregated within the MPF reporting.

¹⁵³ SOGEA, SoG.fast and G.fast products should be aggregated within the GEA-FTTC reporting.

- 7.9 We consider that these proposed requirements are appropriate and proportionate in relation to BT's market power in each of the relevant fixed telecoms markets in which these are to be imposed.
- 7.10 We note that we are currently consulting on minor alterations to the existing Quality of Service regulation to accommodate Openreach's Bulk Grouping provision capability. We expect to incorporate the outcome of that consultation into the regulation for 2021, subject to stakeholder views and feedback between now and the statement for this consultation. We have therefore proposed legal instruments for this review that are inline with our proposals to exempt orders using the Bulk Grouping provision capability from certain QoS regulation.¹⁵⁴

Our reasoning

Quality of service and transparency requirements

- 7.11 We are concerned that, in the absence of appropriate *ex ante* regulation, in the markets we find BT to have SMP, Openreach would have the ability and incentive to provide poor quality provisioning and repairs services, to the detriment of downstream service providers (including BT's downstream business) and end-users.
- 7.12 We therefore propose to impose an SMP condition requiring BT to comply with any QoS standards and reporting requirement we may direct in relation to network access it provides in each of the following product markets – physical infrastructure, wholesale local access, leased lines access and inter-exchange connectivity across all geographic markets. We now consider in turn whether it is appropriate and proportionate to propose directing BT to comply with specific QoS standards and transparency requirements in each market.

Quality of service directions

Physical infrastructure market

- 7.13 We are not proposing any specific QoS standards in the physical infrastructure market at this time. While PIA was introduced in 2010, a number of improvements to the product have been made (and more are expected) as a result of our recent regulatory decisions. Given these changes (and the expected increase in the take-up of PIA) we consider that a period of time will be needed to understand if QoS standards are required. Therefore, we intend to monitor Openreach's progress against the KPIs that it has agreed with industry. This will allow us to explore the case for QoS standards on PIA products in the future, should competition concerns arise.

¹⁵⁴ Ofcom, 2019. [Consultation: Upgrading broadband customers to superfast products](#). [accessed 2 December 2019]

Downstream product markets

- 7.14 In the downstream markets (wholesale local access, leased lines access and inter-exchange connectivity), we consider it appropriate and proportionate to propose to direct BT to meet certain quality standards to address our concerns around QoS. We set out our reasoning for this below.
- 7.15 Historically (prior to 2014), we relied on contractually agreed SLAs and SLGs, regulatory obligations of transparency (KPIs) and non-discrimination obligations to ensure service quality across regulated products.¹⁵⁵ However, we found that these factors were not sufficient on their own:
- a) In the 2014 FAMR we undertook a review of matters relating to quality of service delivered by Openreach in the supply of regulated wholesale fixed access services.¹⁵⁶ We determined that over several years, from 2009, there had been a decline in Openreach's performance, particularly in relation to fault repairs and installation of WLR and MPF services. We also concluded that our historical approach to service quality had not been sufficient to prevent material detriment to downstream competition in the fixed access markets, arising out of BT's SMP.¹⁵⁷
 - b) We came to a similar conclusion in the 2016 BCMR, finding that Openreach's service performance in the provision of Ethernet services had deteriorated materially and was inadequate in several respects – concluding that additional regulatory measures were required to address Openreach's incentives to meet level of QoS that would deliver significant improvements in Ethernet provision for downstream providers and customers.¹⁵⁸
- 7.16 For Openreach as a legally separate entity to have an incentive to improve service quality, the net impact on profitability from doing so must be positive. For example, given the cost of maintaining service quality, the historical performance suggests that SLG payments cannot be set at a level that would, on their own (or combined with transparency regulation), maintain service standards. Given past experience, we remain concerned that SLAs/SLGs, KPIs and non-discrimination regulation alone are not sufficient to incentivise Openreach to provide good quality and therefore we consider that QoS regulation is still required. The standards (combined with the potential for enforcement action) incentivise Openreach to improve service quality by making it profitable to invest in quality.
- 7.17 We noted in the FAMR Statement 2014 (when we first introduced Quality of Service standards) that our analysis in the consultation considered various factors, including the reductions in field engineering resources from 2009-2010 that coincided with the observed

¹⁵⁵ See General Remedies for further information on SLAs and SLGs.

¹⁵⁶ Ofcom, 2014. [Statement: Fixed Access Market Reviews](#). (2014 FAMR Statement). [accessed 13 November 2019]

¹⁵⁷ Ofcom, 2018. [Statement: Quality of Service for WLR, MPF and GEA](#). Para 2.18. [accessed 12 December 2019]

¹⁵⁸ Ofcom, 2016. [Statement: Business Connectivity Market Review – Volume 1](#) (2016 BCMR), 13.5. [accessed 13 November 2019]

fall in service performance.¹⁵⁹ At that time we thought the evidence raised a question about whether Openreach had been resourced below reasonable contingency levels.¹⁶⁰ Further, when we considered this issue in 2013, almost all CPs who expressed a view believed that in the face of challenging operational situations, it is more profitable for Openreach to pay the SLG than to strive to deliver.¹⁶¹ Our analysis demonstrated that Openreach's decline in performance between 2009 and 2012 was in line with increasing SLG payments while the net revenue outcome for Openreach was still positive.¹⁶²

- 7.18 Setting QoS regulation has effectively removed the scope for Openreach to make substantial costs savings by reducing performance (principally through reductions in its engineering workforce). Therefore, Openreach are not able to offset the SLG losses and have more incentive to maintain quality levels up to a position that allows for an efficient number of SLG payments. The standards thus complement SLAs and SLGs (which are designed to incentivise the efficient provision of reliable services to Openreach's wholesale customers).
- 7.19 We therefore consider that, due to the risk that withdrawal of the QoS standards would lead to a reversal of the current positive incentives to maintain staffing levels and consequent performance outcome, we should propose QoS standards in the wholesale local access, leased lines access and inter-exchange connectivity markets.

Setting appropriate standards and levels

- 7.20 We think that the existing standards and levels have brought Openreach's service quality to a good level. We are therefore proposing to broadly maintain the existing standards in each of the wholesale local access, leased lines access and inter-exchange connectivity markets. However, there are some aspects of this regulation where minor alterations may be appropriate to keep pace with the changes in Openreach's product portfolio. We address these issues separately below – the upper percentile standard (7.25) dark fibre (7.44), aggregation of new WLA services (7.47), FTTP (7.517.51).
- 7.21 The majority of stakeholders that responded to our March consultation agreed with our proposal to roll forward the 2021 QoS standards and levels, indicating their approval of Openreach's current service quality.¹⁶³ Below we consider the impact of the current QoS standards and levels which supports our proposed position that the existing standards and levels are an effective remedy.

¹⁵⁹ 2014 FAMR Statement, 11.13.

¹⁶⁰ 2014 FAMR Statement, 11.14.

¹⁶¹ Ofcom, 2013. [Consultation: Fixed Access Market Reviews](#) (July 2013 FAMR Consultation), 10.54. [accessed 13 November 19]

¹⁶² July 2013 FAMR Consultation [Annexes](#), 9.50. [accessed 13 November 2019]

¹⁶³ Ofcom, 2019. [Consultation: Promoting competition and investment in fibre networks – Initial proposals – Approach to remedies](#) (March 2019 Remedies consultation (initial proposals)). [accessed 13 November 2019]

WLA

7.22 For products in the wholesale local access market, we have seen a steady improvement and stabilisation in Openreach’s delivery of QoS since we imposed increasingly challenging QoS standards in relation to repair and provision in the 2014 review and again in the 2018 review. The QoS standards introduced in 2018 in particular took account of rising customer needs on principally copper services. It accounted for the widespread take up of new services by expanding the scope of the standards to cover FTTC services.¹⁶⁴ It also required the vast majority of repairs to be completed within a reasonable timeframe.¹⁶⁵ We note that these standards will tighten in the next financial year.¹⁶⁶ The stakeholder feedback received from our March consultation indicated broad agreement with our provisional view that the existing standards provide a good level of service and remain an appropriate and proportionate intervention.¹⁶⁷ Although Sky disagreed with our proposed approach to QoS, we also note their acknowledgement that the regulation has resulted in an improvement in Openreach’s service quality.¹⁶⁸ Openreach have complied with the standards we required of them in the WLA market and we have not been required to take enforcement action.

Leased lines and inter-exchange

7.23 For leased lines services, we have seen a significant improvement in Openreach’s Ethernet provisioning performance since we first imposed QoS standards in the 2016 BCMR, which has been recognised by Openreach’s customers.¹⁶⁹ We therefore consider that maintaining the standards and levels proposed in the recent BCMR 2019 into the next review period is an appropriate remedy for our competition concerns in the leased lines and inter-exchange connectivity markets.

¹⁶⁴ Ofcom, 2018. *Statement: Quality of Service for WLR, MPF and GEA*. Paragraph 3.50. [accessed 12 December 2019]

¹⁶⁵ Ofcom, 2018. *Statement: Quality of Service for WLR, MPF and GEA*. Paragraph 1.6. [accessed 12 December 2019]

¹⁶⁶ Repair completion with SLA timelines will tighten from 86% to 88%, Repair completion with SLA+5 days will move from 96% to 97%, % installations to be completed by the Committed date will increase from 92% to 95%, the FAD standard will increase from 12 days to 10.

¹⁶⁷ ACNI response to March 2019 Remedies consultation (initial proposals), 4.1; ACW response to March 2019 Remedies consultation (initial proposals), p3; BNP Paribas Asset Management response to March 2019 Remedies consultation (initial proposals), 4.1; BUUK response to March 2019 Remedies consultation (initial proposals), 4.1; CMS and Intercai Mondiale response to March 2019 Remedies consultation (initial proposals), p7; Openreach response to March 2019 Remedies consultation (initial proposals), 132, 150, 151; The Consumer Council for NI response to March 2019 Remedies consultation (initial proposals), p4; SSE response to March 2019 Remedies consultation (initial proposals), 4.1; [redacted]

]; [redacted]

]; [redacted]

]; [redacted]

]. Sky and TalkTalk disagreed and argued for ever increasing standards (Sky response to March 2019 Remedies consultation (initial proposals), p23; TalkTalk response to March 2019 Remedies consultation (initial proposals), 9.3).

¹⁶⁸ Sky response to March 2019 Remedies consultation (initial proposals), p23.

¹⁶⁹ 2019 BCMR, 15.22.

7.24 However, in recent months, we have become increasingly concerned with Openreach’s likelihood to meet the Upper Percentile standard. We have therefore considered the appropriateness of retaining this standard.

Upper Percentile

7.25 Our starting position is to maintain the Year 2 Upper Percentile standard imposed in the 2019 BCMR into the new review period.¹⁷⁰

7.26 We note that Openreach did not meet the Upper Percentile QoS standard set during the Temporary Conditions period.¹⁷¹ In June 2019, we made the decision to lower the standard compared to that set for the Temporary Conditions. This took into account that:

- a) there are challenges in setting the precise level of maximum achievability in an area where exogenous factors come into play (wayleaves and traffic management orders are an industry-wide challenge);¹⁷²
- b) the prevalence of complex orders may be higher during the 2019-2021 market review period than in the past;
- c) evidence submitted by stakeholders that the Temporary Conditions level could be unachievable in some years.

7.27 We also set a more challenging level for Year 2 to acknowledge the potential for further improvement in performance by Openreach (noting past and planned performance enhancement initiatives), and in order to incentivise this further improvement.¹⁷³

7.28 In the lacuna period following the expiry of the 2017 Temporary Conditions on 31 March 2019, Openreach’s performance against three standards declined relative to performance in 2018, particularly against the Upper Percentile (see Figure 7.2).¹⁷⁴ However, the decline in performance against the new standards continued into the subsequent review period that started on 1 July 2019.

¹⁷⁰ No more than 3% of provisions delivered in more than 133 working days.

¹⁷¹ 2019 BCMR, p333, footnote 1278. We considered that given Openreach’s improved performance during the period, and in light of the levels we set for business connectivity standards in that market review, as a matter of administrative priority, we would not take further investigative or enforcement action.

¹⁷² We have historically set the Upper Percentile standard as: No more than 3% of provisions delivered in more than; 159wd (2016/17); 118 wd (2017/18); 118 wd (17-19 -the Temporary Conditions period), 138 wd (2019/20) and 133 wd (2020/2021). 2016 BCMR, Table 13.3; Ofcom, 2017. Nov 2017 *Business Connectivity Markets, temporary conditions*, Table 6.1.

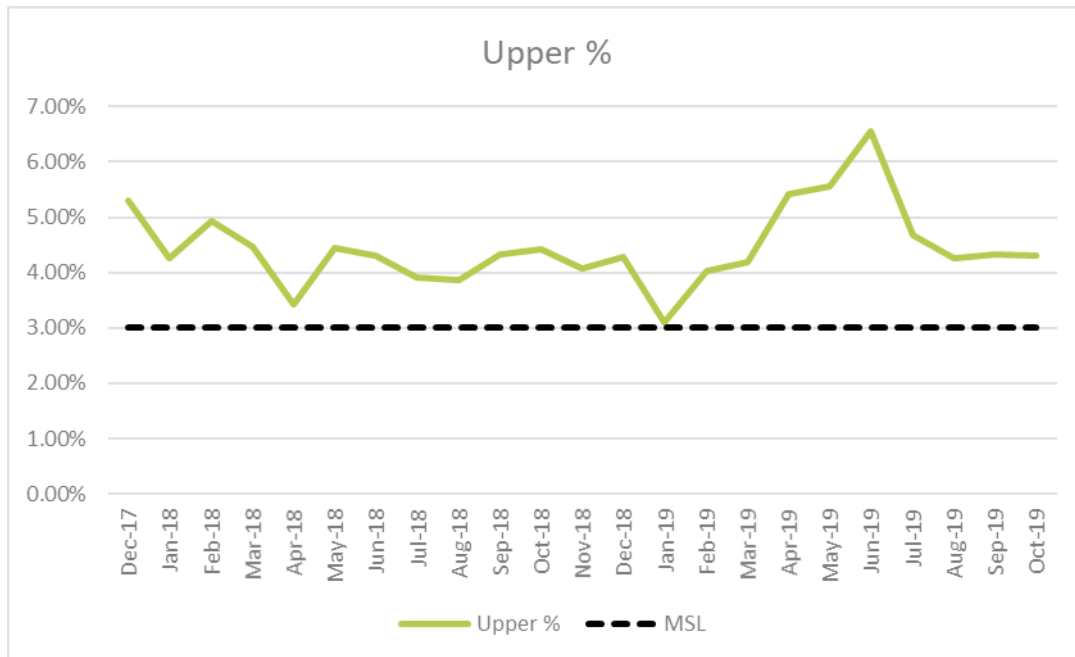
¹⁷³ Openreach response to BCMR 2019 24th Notice, 29 March 2019. An example of improvement initiatives that may enhance performance against the Upper Percentile QoS standard include [3<

] Also see later text on Openreach’s ‘Reimagining Ethernet’ QoS programme

¹⁷⁴ [3<

]

Figure 7.2: Upper Percentile Performance¹⁷⁵



Source: Ofcom analysis of Openreach Ethernet KPI reports.

7.29 [redacted]

].¹⁷⁶ [redacted]

]. Openreach also set out its view on alternatives to the Upper Percentile, given it has never met this standard.¹⁷⁷

7.30 As stated above, we are proposing to maintain the current Upper Percentile standard. However, if in light of the evidence above and consultation responses we were to consider possible alternatives, they might include:

- a) One option is to reduce this standard – either in the design of the standard or the level. However, we have concerns that this may not offer the right incentives to Openreach to make service performance improvements and maintains the perverse incentives that exist with the current standard.¹⁷⁸

¹⁷⁵ In the period before July 2019 the Upper Percentile measure was no more than 118 working days, whereas from July 2019, the Upper Percentile measure is no more than 138 working days. The geographies covered by the QoS Standards also changed from July 2019.

¹⁷⁶ [redacted]

¹⁷⁷ [redacted] Openreach, 2019. *Ethernet Quality of Service: Openreach comments on the Upper Percentile QoS Standard and other QoS matters during the Fixed Telecoms Market Review*. 01 November 2019. (November 2019 Ethernet QoS Submission).

¹⁷⁸ Given the structure of the standard, we observe there is a perverse incentive for Openreach not to close orders which could lead to apparent compliance.

- b) Alternatively, we could take a different approach to this standard. For example:
 - i) We could replace the standard with a target outcome that triggers an obligation for Openreach to provide an explanatory report to Ofcom if the target is not met. We could then consider the substance of the report and investigate further (with potential for enforcement action) if we considered it appropriate.
 - ii) We could disaggregate this standard across different elements of the tail orders process to better account for the challenges Openreach face in, for example, wayleaves, and focus on elements of the process where we have significant concerns.
- c) Openreach offer two further options in its paper. Its preferred approach is the removal of the Upper Percentile standard and a fall back to the existing transparency requirements.¹⁷⁹ It also considers that extending the compliance period could be an effective change.¹⁸⁰

7.31 Given our position and the new evidence, we welcome our stakeholders' views on our approach to this specific standard.

Pushing Openreach further

7.32 In response to our March consultation, TalkTalk and Sky both argued for further increases in the MPF and GEA-FTTC standard into the next review period.¹⁸¹ Below we explain why we consider that it is appropriate to maintain rather than increase the existing levels of each standard for the wholesale local access, leased lines access and inter-exchange connectivity markets.

WLA

7.33 For WLA 2018 we considered Openreach's technical capabilities to make improvements and the time it will take to achieve them. We considered that it would be unlikely to be economically efficient or even practically possible for Openreach to meet its SLAs 100% of the time. This is because certain jobs require complex civil engineering work and can only be done within the SLA at very high cost, if at all.¹⁸²

7.34 In 2018 we set standards that were stretching enough to drive Openreach to make improvements, but that are not so high that they are unachievable. We also considered the additional engineering resources Openreach may have needed to recruit, and the time required for Openreach to achieve those staffing levels and for the newly recruited or retrained engineers to become competent. This was particularly relevant in our decision as the quality standards set increased year on year. We set standards close to the upper limit of

¹⁷⁹ November 2019 Ethernet QoS Submission, p7.

¹⁸⁰ November 2019 Ethernet QoS Submission, p8.

¹⁸¹ TalkTalk response to March 2019 Remedies consultation (initial proposals), 9.3; Sky response to March 2019 Approach to remedies consultation, p22-23.

¹⁸² Ofcom, 2018. [*Statement: Quality of Service for WLR, MPF and GEA*](#). Paragraph 3.118. [accessed 12 December 2019]

what we perceived to be the operational limit of Openreach. For example, we concluded that without further process improvements, Openreach's achievable on time repair performance could rise to at least 89.3% during the 2018-2021 and set the level for the equivalent standard very close at 88% (85% including the *force majeure* allowance).¹⁸³

7.35 We consider that at this time requiring QoS levels to increase further is unlikely to be appropriate, given that we would expect there to be limited benefits to customers set against high product costs of further QoS improvements. In this regard, we note that as QoS standards increase and tend closer to and past operational limits, the additional cost of making small improvements can be disproportionately large.¹⁸⁴

7.36 Moving the levels in this way will further stretch Openreach resources. Given the limited expected benefits for consumers, and the broader demand on Openreach management and engineering resources at a time that they are engaged in a major programme of network replacement, we do not consider that increasing the QoS standards imposed in the WLA markets would be appropriate.

7.37 Additionally, pushing up the repair requirements (particularly for residential products on a legacy network) has two further impacts:

- a) It would involve extensive long-term investment in largely fixed assets from Openreach. For example, hiring, training and retaining sufficient resource to meet ever increasing QoS levels is a nationwide investment for at least the review period.
- b) We note that increasing QoS levels (and investment) on copper services still further, as Openreach transitions to a fibre network, will increase the risk of stranded assets on the legacy network given its remaining lifespan.

7.38 We also note the asymmetric risk of events causing a decline in quality. Openreach faces a risk of external events it does not control driving down quality (but does not face the possibility of external events increasing quality – at least to a symmetric extent). Hence to meet the standard Openreach will need to on average maintain quality above the standard in “business as usual” circumstances – otherwise it runs the risk of failing the overall standard.¹⁸⁵

Leased Lines and inter-exchange connectivity

7.39 For leased lines access services, we have seen a significant improvement in Openreach's Ethernet provisioning performance since we first imposed QoS standards in the 2016 BCMR.¹⁸⁶ This has been reflected in the changing attitudes of Openreach's leased line customers who support our view that the level of performance has improved.¹⁸⁷ Therefore, in the BCMR 2019 Statement, we proposed broadly the same form of remedies for QoS as

¹⁸³ Ofcom, 2018. [Statement: Quality of Service for WLR, MPF and GEA](#). 89.3%: see para. 6.41. [accessed 12 December 2019]

¹⁸⁴ Ofcom, 2018. [Statement: Quality of Service for WLR, MPF and GEA](#). Section 5-7 for operational capabilities and Section 10 for Resourcing. [accessed 12 December 2019]

¹⁸⁵ 2014 FAMR Statement, 11.196.

¹⁸⁶ 2019 BCMR, 15.22.

¹⁸⁷ 2019 BCMR, 15.22.

those in the 2016 BCMR and the Temporary Conditions statement, though requiring further incremental improvement in performance in some cases.

- 7.40 It is too early to tell if a different approach will be required for products in the inter-exchange market, however given the similarities with the leased line product set, we would expect a similar outcome.

Conclusion

- 7.41 We therefore propose that we should maintain the existing QoS standards and levels in each of the wholesale local access, leased lines access and inter-exchange connectivity markets. The current levels we have set across the markets were considered to be an appropriate balance between costs and meeting identified Openreach customer and end-consumer needs, which we identified through consumer survey (in the case of WLA) and feedback from our stakeholders. While we have not undertaken further consumer investigation for this review, given the ever-greater role of telecommunications services in the lives of consumers, we do not consider that it is likely that consumer valuation of services delivery will have fallen. We think that proposing to maintain the existing levels (see Table 7.1) that we have set remains appropriate and proportionate.

Geographic differentiation

- 7.42 In each of the wholesale local access, leased lines access and inter-exchange connectivity markets in which we propose to regulate QoS, we propose to impose the same QoS standards across all geographic markets. We are proposing the same standards because we see them as an integral part of all regulated products and therefore we think that they should apply no matter where the product is located. In any event, we do not think it is possible to meaningfully differentiate QoS standards across geographic markets given Openreach's regional operational structure and the potential for this (and the scope of the geographic markets) to change. For clarity, Openreach's compliance with each standard will be an aggregate measure across geographic and product markets.
- 7.43 In one geographic leased lines market, HNR areas, we are not proposing to impose QoS standards (i.e. on EAD, EBD and Cablelink). The reason is that we consider that the competitive market conditions in these HNR postcode sectors will continue to be sufficiently different from those in the rest of the UK - we might see competitive market conditions in these areas approaching those we see in CLA today. Therefore, there is less need for stringent QoS regulation. In the Transparency section we are proposing to require the provision of specific KPIs on Openreach's performance against the QoS standards in the HNR areas.¹⁸⁸ This will allow us to compare Openreach's performance in these areas relative to the geographic areas where the QoS standards do apply. We will have the option of amending the QoS Direction to extend the scope of the QoS standards to include HNR areas, should we observe a significant deterioration in Openreach's performance during the market

¹⁸⁸ See sub-section on transparency where we explain "We are not proposing for Openreach to split KPI data between different geographic markets (however, there is a split for the HNR areas)"

review period. On balance, we therefore consider it appropriate not to propose QoS standards in these areas.

Approach to different products

Dark Fibre

- 7.44 As we explained above, the dark fibre remedy is an intervention we consider necessary to address our competition concerns in the leased lines access area 3 and inter-exchange connectivity markets. Absent QoS standards for these circuits, Openreach would have the ability and incentive to offer poor service levels for provisioning and fault repairs for the proposed dark fibre products it would offer in the markets we have found competition concerns.
- 7.45 We propose to maintain the approach taken in the 2019 BCMR – setting a separate standard for dark fibre but aggregating dark fibre and Ethernet data for compliance against the level for the appropriate standard. For example, the repair standards are based on the SLA for each product and therefore the standard for dark fibre is different from the standard for actives given the difference in the contractual SLAs.¹⁸⁹ We note that the total of the dark fibre and active standards are then aggregated against the Repair Standard level. Furthermore, the process for installing dark fibre orders is broadly identical for Openreach to perform compared to Ethernet, aside from the final connection of the active equipment.
- 7.46 We remain open to considering an alternative approach separate from active circuits in the future. We propose KPI data for dark fibre products to be separated out from active circuits.

MPF and GEA-FTTC

- 7.47 In the 2018 Quality of Service Statement we applied quality standards to GEA-FTTC services in addition to WLR and MPF.¹⁹⁰ Now, Openreach are offering new variants of the GEA-FTTC service – G.fast and single order versions of GEA-FTTC and G.fast (SOGEA and SoG.fast), all of which are in early market deployment phase and not yet fully launched.
- 7.48 Our analysis suggests the provision and repair processes for these three sub-products are broadly equivalent to those for GEA-FTTC. Though there are some differences between the products, such as lead times for SOGEA compared to GEA-FTTC we do not consider these material.¹⁹¹ At the moment, volumes of these products are relatively low (and are therefore of limited statistical value), however at present we observe that performance is broadly higher for these sub products than for existing GEA-FTTC products.¹⁹² We think it is

¹⁸⁹ Ethernet repair SLA is 5 hours while the Dark Fibre repair SLA is 18 hours. [Openreach DFX Contract Schedule 4, 3.2.](#) [accessed 23 October 2019]. [Openreach Contract for Connectivity Services Schedule 4 SLA, 2.1.](#) [accessed 23 October 2019]

¹⁹⁰ QoS draft statement March 2018, 3.44-3.51.

¹⁹¹ Openreach's response dated 22 October 2019 to the s.135 notice titled Promoting investment and competition in fibre networks dated 24 September 2019.

¹⁹² Openreach's response dated 22 October 2019 to the s.135 notice titled Promoting investment and competition in fibre networks dated 24 September 2019.

appropriate to aggregate these products into the existing GEA-FTTC standard given the similarity of the products.

- 7.49 We consider Openreach’s Single Order Transitional Product (SOTAP) to be broadly technologically equivalent to MPF and that it should be aggregated within the calculation of the MPF standards. Since we expect low volumes of the product, we do not think this will materially impact Openreach’s ability to meet the MPF standards.
- 7.50 We therefore propose that quality of service for SOTAP, G.fast, SOGEA and SoG.fast products should be measured against the existing standards for MPF and GEA-FTTC. For the purposes of calculating compliance with the standards, the MPF standard aggregate MPF and SOTAP data, while the GEA-FTTC standard should aggregate all GEA-FTTC products, including G.fast, SOGEA and SOG.fast. We consider that these obligations are consistent with our legal duties, noting that these are key services supporting network access.

FTTP

- 7.51 In response to our March consultation, Sky and TalkTalk argued that to protect consumers on FTTP, Ofcom should impose standards on the FTTP anchor product in addition to FTTC standards. Both organisations argued that without this, BT would have an incentive to deteriorate quality on FTTP until regulation transitions from copper to fibre.¹⁹³ TalkTalk also argued that QoS obligations will in time be required on FTTP and FTTC simultaneously because increasingly, the constraint from the FTTC 40/10 will weaken and diminish the ability of FTTC to constrain FTTP quality levels.¹⁹⁴ Meanwhile, Openreach suggested that it was too early to determine the relevant measures for FTTP, considering that the ultrafast market is sufficiently competitive to provide incentives for good service to be provided. It suggested Ofcom leave sufficient scope for the market to develop without the constraint of regulation.¹⁹⁵
- 7.52 We recognise the concerns of our stakeholders around QoS standards on FTTP. It is our provisional view that in the longer term it is likely to be appropriate to set standards in relation to FTTP, but we do not consider that we are in a position at this time to determine what such standards should be. Not only is FTTP a new product with relatively low volumes (as of August 2019, Openreach volumes for FTTP sit at [§<])¹⁹⁶, but it is also technologically different from FTTC – meaning the FTTC standards may not be an appropriate measure of quality. We will, however, continue to monitor FTTP performance with KPIs, which will enable us to consider the need for, and nature of, specific quality standards on FTTP in the future.

¹⁹³ Sky response to March 2019 Remedies consultation (initial proposals), p23; TalkTalk response to March 2019 Remedies consultation (initial proposals), 9.4. In this section Sky also noted that these FTTP/FTTC standards should also increase over time.

¹⁹⁴ TalkTalk response to March 2019 Remedies consultation (initial proposals), 9.5.

¹⁹⁵ Openreach response to March 2019 Remedies consultation (initial proposals), 167.

¹⁹⁶ [§<

]

Transparency

Our proposals

7.53 As explained above, we are proposing an SMP condition which requires BT to comply with any reporting requirements as Ofcom may direct, in relation to each of the wholesale local access (Areas 2 and 3), leased lines access (Areas 2 and 3), physical infrastructure and inter-exchange connectivity markets. Given this, we have considered whether the current form of these reporting requirements remains appropriate.

7.54 We have an existing reporting framework for wholesale local access, leased lines access and inter-exchange markets which broadly covers¹⁹⁷:

- a) the time it takes for Openreach to complete orders;
- b) fault repair performance;
- c) Openreach's ability to meet its committed delivery date (and the timing of this date); and
- d) monitoring of more complex and delayed orders (including specific in-depth reporting on a less frequent basis).

Openreach are required to provide this information to Ofcom on a regular basis and publish a subset of this data on their website.

7.55 We think that this regime has been largely successful, providing information on key quality metrics which informs our analysis. We are therefore proposing to continue to require BT to provide the comprehensive set of quality of service performance statistics in each market that we provisionally find BT to have SMP .

7.56 However, we are proposing some minor changes to the existing information reporting requirements:

- a) We are not proposing for Openreach to split KPI data between different geographic markets (however, there is a split for the HNR areas).
- b) We are proposing to change the WLA Tail Order reporting requirement from a quarterly to a six-monthly submission.
- c) For the monthly reporting to Ofcom, the monthly snapshot reporting and the quarterly public publication, we propose to require BT make the KPIs available within 15 working days of the end of the reporting period. We propose for the Tail Order reporting requirements that these should be reported within 30 working days of the end of the reporting period.

7.57 We are not proposing any specific information reporting requirements for the physical infrastructure market.

¹⁹⁷ For the full list of KPI reporting information, see Annex 14.

Our reasoning

PIMR

- 7.58 We are not proposing specific PIA KPIs at this time because Openreach and industry have agreed a set of KPIs which are voluntarily reported to Ofcom on a regular basis. There are two categories of these KPIs:
- a) operational (also referred to as service performance) KPIs, which measure various aspects of the PIA product's performance, and each CP's use of PIA;
 - b) no undue discrimination KPIs, which compare PIA to equivalent Openreach 'own-use' products (e.g. Fibre Cities/Towns programme)
- 7.59 When a significant body of evidence has been gathered on Openreach's PIA service quality performance we will consider whether a regulatory intervention is appropriate, taking into account stakeholder views and if the industry agreed voluntary reporting requirements are providing the right incentives on Openreach.

WLA, Leased Lines and Inter-exchange connectivity

- 7.60 Considering that we have recently assessed the set of KPIs as part of the 2018 WLA and 2019 BCMR, we are proposing not to alter the existing set of requirements in either the wholesale local access market or the leased lines access market. Although, we note Openreach's suggestion that some KPIs can be simplified (as we have recently done with the BCMR KPIs),¹⁹⁸ we suggest that the best approach is for industry and Openreach discuss and agree whether it is appropriate to change these KPIs in the first instance.
- 7.61 We consider that it remains necessary to continue to require KPIs to be broken down such that we can monitor and compare trends in Openreach's performance for individual network access services. In turn, this enables us to identify:
- a) emerging issues particular to certain services (for example between existing copper-based services and newer fibre-based services);
 - b) potential discriminatory conduct where certain telecoms providers or groups of telecoms providers (for example between BT divisions and rival providers) consume particular Openreach wholesale inputs; and
 - c) Openreach's performance at individual product levels, given the potential differences in the complexity for orders across their product portfolio.
- 7.62 For the wholesale local access and leased lines markets, although we are proposing to make directions setting reporting requirements in each respective geographic market (i.e. Area 2 and Area 3), we are proposing that the reporting is provided in aggregate for each product market given that in each case we are applying the same QoS standards across both geographic markets. Since the current regional splits used for reporting are based on Openreach's existing internal processes (which are not aligned to or geographic market

¹⁹⁸ Openreach response to March 2019 Approach to remedies consultation, 132e, 183.

delineations) and considering the potential for our geographic markets to change in the next review period, it seems disproportionate to require Openreach to mirror their organisational structures to our changing market definitions.

- 7.63 For the HNR area in the leased lines market, we propose that this information is reported separately. This is because HNR areas are not subject to QoS standards and therefore the split is required to provide additional protections to Openreach's customers and inform them or us of any potential competition concerns.

When Openreach are required to report information

- 7.64 In relation to each of the KPI requirements we are imposing, we propose to require BT to make the KPI information available within 15 working days of the end of the reporting period (i.e. within 15 working days of the end of that month or quarter). We note that the WLA and BCMR reporting had previously been unaligned (with KPIs for the WLA market being reported within 14 days and KPIs for the BCMR being reported within 15 days) and this proposal brings alignment to these processes. We also propose to bring the Monthly Snapshot reporting into alignment and that this should be reported within 15 working days of the end of the relevant month.
- 7.65 We note that the WLA Tail Orders reporting was previously reported on a quarterly basis. Given the volumes and the time it takes for Openreach to resolve tail orders, we think that it is proportionate to alter this reporting requirement to a six-monthly basis to align with the BCMR Tail orders reporting requirement.

Potential future changes to the standards

- 7.66 As articulated above, we think the current QoS framework sets a good level of quality for Openreach to meet over the market review period. However, in the future we would be open to alternatives to the type of framework that is in place. Openreach suggested in its consultation response that its service vision includes moving away from an Ofcom-led process to a more flexible approach including both regulated targets and industry agreed measures.¹⁹⁹ It argued for a regime where Openreach and CPs are encouraged to work together in advance of further regulation that has been successful in the past (such as the SLA/SLG negotiating framework) and a similar approach could be explored for QoS.²⁰⁰ We note that Openreach would be willing to engage in discussions on an alternative process and we would be willing to consider, in principle, replacing the standards by directing Openreach to meet alternative, industry agreed arrangements during the next review period.²⁰¹
- 7.67 We also note Openreach's comment around the potential market flux in the upcoming (and longer) review period. For example, Openreach argues in its consultation response that the introduction of unrestricted PIA will make it more attractive for competitors to provide

¹⁹⁹ Openreach response to March 2019 Approach to remedies consultation, 137.

²⁰⁰ Openreach response to March 2019 Approach to remedies consultation, 138-140.

²⁰¹ We note that the new ECC would allow us to make such a commitment enforceable.

easier circuits, leaving Openreach to deliver the more challenging ones - for example, those that require new network build.²⁰² This could see a decline in residential product volumes (due to copper retirement and increased full fibre competition) and a decline in Ethernet volumes (with current purchasers moving to dark fibre or alternative providers who use PIA). This outcome could see Openreach move away from actives to a portfolio focused on higher volumes of passive products.

7.68 We consider that if Openreach brings information that demonstrates some standards are no longer appropriate (due to product improvements or market developments suggested by Openreach in their March 2019 consultation response) we would evaluate their proposal and consider amending the standards by direction to address the issue.²⁰³ For example, in 2016 we adapted the standards to reflect a change in the mix of wholesale services purchased by Openreach which would have reduced the effectiveness of the regulation.²⁰⁴

7.69 Among other things, Openreach are currently running two programmes that could impact on our QoS regulation:

- a) **Broadband:** Openreach has told us that it is currently running a range of initiatives in collaboration with industry to improve end-customer experience. These include Service Layer Data sharing, line broadband service classification by likelihood of performance improvement following an Openreach engineering visit, engineer training, cultural changes and efforts to create a “Working Broadband” definition. Openreach consider that these workstreams will improve performance against the regulated service measures.²⁰⁵ Aside from the expectation this will improve customer and end-customer service experience, this work could impact on the QoS regulation if Openreach and industry agree changes to the definition of a fault (which impacts the definition of a fault in the legal instruments and may require adjustments to the regulation to compensate).
- b) **Reimagining Ethernet:** Openreach believes it should evolve the Ethernet Access Direct (EAD) provision process from today’s ‘one-size-fits-all’ process to a more differentiated model. It thinks this change would create benefits for Openreach, CPs and end-customers by moving to a new model. Over the last year, Openreach has run an extensive period of stakeholder engagement with its customers.²⁰⁶ Openreach has recently stated that it expects the launch of the main REP provision process to begin in March 2020 and be delivered by September 2020. Additional functionality will be added later and is currently scheduled to be completed in May 2021.²⁰⁷

²⁰² Openreach response to March 2019 Approach to remedies consultation, 133a.

²⁰³ Openreach response to March 2019 Approach to remedies consultation, 133.

²⁰⁴ Ofcom, 2016. *Statement: Quality of Service for WLR and MPF*. (2016 QoS Consultation). [accessed 13 November 2019]

²⁰⁵ Openreach, 2019. *Broadband: Openreach initiatives to improve end-customer experience*. 22 November 2019..

²⁰⁶ Openreach, 15 February 2019 (version 5.0), *Re-imagining Ethernet Provision - Industry Consultation Summary Report*, (Openreach log in required). [accessed 22 May 2019]. Openreach’s response to the 2018 BCMR Consultation (quality of service), Annex 5. Openreach, 21 February 2019, *ETH009/19 Re-imagining Ethernet Provision – implementation*, Openreach customer briefing. (Openreach log in required). [accessed 22 May 2019].

²⁰⁷ Openreach, 18 June 2019, Ethernet Product & Commercial Group – June 2019 meeting slides, and previous 19 March 2019 industry meeting slides as per Openreach’s response to BCMR 2019 s.135-26.

Conclusion

- 7.70 We consider that the proposed requirements set out above are proportionate in that they are addressing the market power that we have provisionally found BT holds. Our proposals go no further than is necessary to address Openreach's ability and incentive to provide poor quality provisioning and repair services and only requires the provision of information to monitor quality of service.
- 7.71 Following on from the above, to give effect to this proposal, we propose to set SMP Condition 10 at Volume 5 requiring BT to comply with any QoS standard and reporting requirement we may direct in relation to network access it provides in each of the following product markets – physical infrastructure, wholesale local access (Areas 2 and 3), leased lines access (HNR, Areas 2 and 3) and inter-exchange connectivity. These proposed conditions would allow us to make the directions we propose above. Section 87(3) of the Act authorises the setting of SMP services conditions in relation to the provision of network access. Section 87(5) of the Act provides that such conditions may include provision for securing fairness and reasonableness in the way in which requests for network access are made and responded to and for securing that the obligations contained in the conditions are complied with within the periods and at the times required by or under the conditions. In this regard we note Article 12(1) of the Access Directive, which provides that national regulatory authorities may attach to conditions relating to network access obligations covering fairness, reasonableness and timeliness. Section 87(6)(b) of the Act also specifically authorises the setting of SMP services conditions which require a dominant provider to publish, in such a manner as Ofcom may direct, all such information for the purposes of securing transparency.
- 7.72 We note the BEREC Common Positions,²⁰⁸ in particular identifies as best practice that national regulatory authorities should require SMP operators to provide a reasonable defined level of service (BP22/BP32) to address the concern that access services may not be of reasonable quality and service levels may not be comparable with those provided by the SMP operators to their own downstream businesses. We also note the objective of transparency (BP16/BP26 and 17/27) and reasonable quality of access product (BP24/BP34). In particular, we note that BP17/BP27 states that national regulatory authorities should require SMP operators to make certain information including KPIs publicly available and BP24/BP34 supports the imposition of KPIs as a means of monitoring SMP operators' compliance with non-discrimination obligations. We have taken utmost account of the BEREC Common Positions, and particularly have reflected the aforementioned elements.

²⁰⁸ BEREC, BoR (12) 126; BEREC BoR (12) 127

Consultation question(s)

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

8. Legal tests

8.1 In Sections 3-7 we set out our proposals to require Openreach to provide network access and associated remedies designed to support and make effective that network access. In summary we have decided to impose to the extent set out above the following in each of the physical infrastructure, wholesale local access, leased lines access and inter-exchange connectivity markets:

- Requirement to provide network access on reasonable request;
- Requirement to publish and operate a process for requests for new forms of network access;
- Requirement not to unduly discriminate;
- Requirement to provide certain forms of network access on an EOI basis;
- Requirement to publish a Reference Offer;
- Requirement to notify changes to charges, terms and conditions;
- Requirement to notify technical information;
- Requirement for quality of service; and
- Specific network access and associated requirements.

8.2 In order to give regulatory effect to our proposals we propose to set the draft SMP conditions set out in Volume 5.

Section 47 tests

8.3 When imposing SMP obligations, we need to demonstrate that the obligations in question are based on the nature of the problem identified, proportionate and justified in light of the policy objectives as set out in Article 8 of the Framework Directive. For each draft SMP condition set out in this consultation, we consider that the conditions we are proposing satisfy the tests set out in section 47 of the Act, namely that the proposed obligation is:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or against a particular description of persons;
- proportionate to what the condition or modification is intended to achieve; and
- transparent in relation to what it is intended to achieve.

Objectively justified

8.4 We consider that each of the draft SMP conditions we are proposing is objectively justifiable. The remedies that we are proposing are designed to address the competition concerns that we have identified in our market analysis (see Volume 2). As explained in Section 1, our provisional market analysis has found that Openreach has the ability and incentive:

- to refuse to supply access and thus restrict competition in the provision of products and services in the relevant downstream markets;

- to favour its downstream retail businesses to the detriment of its competitors in the relevant retail markets, by both price and non-price discrimination;
- not to invest in new networks or do so more slowly than would occur in a competitive market;
- to target price reductions or adopt other commercial terms that distort competition in the rollout of new networks; and
- to not maintain an adequate level of service quality in the provision and repair of wholesale services or to discriminate in the quality of provision.

8.5 Therefore, in the absence of a requirement to provide network access, supported by associated obligations, Openreach could refuse or impede access, or it could provide access on less favourable terms and conditions compared to those obtained by its own downstream businesses. We are proposing to exercise our discretion in setting these obligations in favour of an approach that supports investment in fibre networks through promoting network competition in areas where this is economically viable, while protecting consumers from excessive pricing or a loss of retail competition in the short term and in areas in which network competition is unlikely to develop.²⁰⁹

8.6 We explain in Sections 3 to 7 for each obligation we are proposing, why we consider that obligation is objectively justified in the context of the markets we are reviewing.

Not such as to discriminate unduly

8.7 We consider that each of the draft conditions does not discriminate unduly against BT. We are proposing that it is the only telecoms provider to hold SMP in the markets that we have identified and the draft conditions seek to address that market position.

Proportionate

8.8 We consider that each of the draft conditions we are consulting on is proportionate to what that condition is intended to achieve. In each case, we are proposing an obligation on BT that: is effective to achieve our aim; is no more onerous than is required to achieve that aim; and does not produce adverse effects which are disproportionate to our aim. We explain why we consider each imposed remedy is proportionate in the context of the markets we are reviewing in Sections 3 to 7.

Transparent

8.9 We consider that each of the draft SMP conditions we are proposing is transparent in relation to what is intended to be achieved. The text of the proposed draft SMP conditions is published in Volume 5 for consultation and the operation of those SMP conditions is aided by our explanations in this document. Our final statement will set out our analysis of responses to this consultation and the basis for any final decision that we take.

²⁰⁹ We explain in Volume 1 how this objective meets our legal duties.

Section 49 tests

- 8.10 In Section 5 we propose to make a Direction in the wholesale local access market limiting the length of the minimum contract period following VULA migrations and connections to no longer than one month. In Section 7, we propose to make certain Directions in each of the wholesale local access, leased lines access and inter-exchange connectivity markets relating to quality of service.
- 8.11 We consider that the Directions we are proposing satisfy the tests set out in section 49(2) of the Act, namely that in each case the proposed Direction is:
- objectively justifiable in relation to the networks, services or facilities to which it relates;
 - not such as to discriminate unduly against particular persons or against a particular description of persons;
 - proportionate to what it is intended to achieve; and
 - transparent in relation to what it is intended to achieve.

Direction in relation to VULA contract lengths

- 8.12 We consider that the direction to require BT to impose a contract length of no more than one month on the above services meets the tests set out in the Act. As set out in section 7, we are proposing to include a power for Ofcom to direct the terms of access as part of the SMP condition requiring BT to provide network access on fair and reasonable terms, conditions and charges. We are making this Direction pursuant to that power.
- 8.13 We consider that the Direction meets the criteria set out in section 49(2) of the Act. In particular, it is:
- a) Objectively justifiable, in that it will promote competition by preventing BT from over recovering the cost of supplying VULA services. It is also likely to facilitate switching and promote retail competition for VULA services.
 - b) Not unduly discriminatory, in that the condition applies only to BT, which is the only operator to have SMP in the markets in which the Direction will apply.
 - c) Proportionate, in that, while it will promote competition, the overall impact on BT's incentives to invest, and more generally on take-up of fibre, is likely to be limited and the measure is, therefore, no more intrusive than necessary to achieve its intended goals.
 - d) Transparent, in that it is clear in its requirements and intention, as explained in this document and the text of the proposed Direction is set out at Volume 5.

Directions in relation to quality of service

- 8.14 We consider that the quality of service directions we are proposing in Section 7 meet the tests set out in the Act. As also set out in Section 7, we are including a proposed power for Ofcom to direct minimum quality of service standards and KPIs. We are proposing to make Directions pursuant to that power.

- 8.15 We consider that these Directions meet the criteria set out in section 49(2) of the Act. In particular, they are:
- a) Objectively justifiable, in that they aim to ensure that BT provides adequate levels of quality of service in relation to the installation and maintenance of the network access on which telecoms providers and their customers rely. For the reasons set out in Section 7, we consider that, to achieve this level of quality of service, it is appropriate to continue imposing quality standards and to set these at the levels we are proposing. We are proposing KPIs on the delivery of specified services to provide transparency around quality of service;
 - b) Not unduly discriminatory, in that the Directions apply only to BT, which is the only operator to have SMP in the markets in which the Directions will apply.
 - c) Proportionate, in that the Directions are targeted specifically to those areas for which regulation is required. We consider that the directions are a proportionate means of achieving the objective of ensuring an appropriate level of service in the delivery of key aspects of network access, taking into account our assessment of BT's operational capabilities and potential costs to customers and telecoms providers. Further, the requirements are structured to take into account the impact of events outside BT's control on its ability to meet the standards. The KPI Directions are targeted at only those services where we consider that transparency is necessary;
 - d) Transparent, in that it is clear in its requirements and intention, as explained in this document and the text of the proposed Directions are set out at Volume 5.

Section 88 tests

- 8.16 We are proposing to impose SMP conditions requiring BT to provide network access on reasonable request on fair and reasonable terms, conditions and charges where no charge control applies in each of the physical infrastructure, wholesale local access, leased lines access and inter-exchange connectivity markets. We set out how we consider the proposed SMP conditions satisfy the tests set out in section 88 of the Act in Volume 4.

Ofcom's duties

- 8.17 As set out in Volume 1, we consider the proposed package of SMP conditions both individually and together meet our duties in sections 3 and 4 of the Act.